Claremont Colleges
Fourth Annual Reading and Curriculum Implementation Conference
Summer Session 1939

Sponsored jointly by Alpha Iota Chapter of Pi Lambda Theta
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FOURTH ANNUAL READING AND CURRICULUM IMPLEMENTATION CONFERENCE

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PLANT TO PROSPER

Jasmine Britton, Director,
Library and Textbook Section, Los Angeles City Schools

Several recent magazines have had articles on the benefits brought to the farmers of the twelve southern states by a vigorous program of action headed under the heartening phrase, "Plant to Prosper." The plan for each farmer involved two major requirements, first to diversify the planting of cotton with other crops, and second to keep a record of daily work. The resulting well-being of the family life was amazing: more crops - more money - more food - better health - more happiness.

It seemed to me that Education could be interpreted in the same way. Teachers make every effort to Plant to Prosper in the minds of their students; and the two requirements for the farmer are equally important for the teacher, first to diversify the planting, and second to keep a record of daily work.

The teacher's personal attitude toward books and reading cannot be overestimated. Her pleasure in the illustrations, the color, humor, delicate imagination of the artist and author are shared with the children only in whatever is the teacher's degree of appreciation; one who is reminded to share frequently a poem or a dramatic incident to illustrate a point under discussion. The principal's interest in books, many books and interests besides professional books, is a stimulus and aid to his teachers who in turn share it with their children. A teacher who is indifferent to the delights of reading, who is perhaps a slow-reader herself, will have less response from her students.

From the very first, books should give pleasure to children, pleasure in the pictures, pleasure in the nonsense rhymes, pleasure in the story, pleasure in beautiful words and eventually in the more difficult fact-finding reference problems.

We have found that interest in reading is encouraged in the primary grades if the steps of difficulty are not taken too rapidly. Many, many easy readers on the same level of vocabulary difficulty should be available at first before the next level of difficulty is attempted. This plan is helpful through the first, second, and third grades. Between the third and fourth grades a different procedure has been successfully used by a number of teachers. In launching the children to read complete books instead of collections of short stories, we have provided a teacher with forty books grouped in small sets of five copies of the same book. Each one of the eight small sets ranges from easy reading in the second grade to the regular fourth grade difficulty. Groups of five children are introduced to the new story and then when all have read it they come together again for a discussion or dramatization of the story.

The weak readers are carried along with the enthusiasm of the strong readers in the discussion or dramatization of the story and thereby strengthened in attaining normal outcomes and a

sense of satisfaction rather than discouragement and failure.

The second requirement in the "Plant to Prosper" program is to keep a record of work. For the teacher of reading we are suggesting notes on the students' interests as they come out in conversation or are helped along by questions. An inventory of students' interests can be surprisingly revealing and of the utmost aid to the teacher in matching those interests and guiding reading. It also means the teacher should have a wide knowledge of books for young people and should continue to discover some new books every season of the year to meet satisfactorily the diverse interests of many minds found in the classroom.

Another happy way for the teacher who enjoys books is that of following up a book which has met with whole-hearted approval with another, "That reminds me, have you read--?" Before long the children will be giving each other this friendly exchange of book interests. The gifted student must be given an adequate enriched program of reading sufficiently challenging to keep him on tiptoe. If he has a hobby there is a book to meet that special interest. At the end of the school year give these active youngsters many interesting titles for their vacation reading and recommend the nearest public library.

One of the most satisfactory new lists of books for children has been wisely selected by Anne Carroll Moore of the New York Public Library. It is entitled, High Roads. It is a representative list of books, published from 1926 through 1938, and is included as a chapter in her book, "My Roads to Childhood," published October 1939, by Doubleday-Doran, N. Y. ($2.00).

A few of the books with their delightful evaluations are listed below with the thought that they may provide some immediate suggestions in carrying out your resolve to read more widely in the field of children's literature and thereby to diversify the planting of reading and observing the children as they bring in a bumper harvest.

Away Goes Sally. By Elizabeth Coatsworth. Pictures by Helen Sewell. Macmillan. 1934.

A charming story in which a little girl of 1800 is transported from Massachusetts to Maine in a little house on runners drawn by twelve strong oxen. Miss Coatsworth received the Newbery award for her The Cat Who Went to Heaven published in 1930. Her novel Here I Stay (Coward) is already claimed by the older girls.

Beethoven, Master Musician. By Madeleine Goss. Illustrated with reproductions of paintings and photographs. Doubleday. 1931.

A biography of Beethoven which portrays the vigor of his personality and his struggle as a creative artist. The appeal of this book to girls and boys with an interest in music was immediate.

A Book of Americans. By Rosemary and Stephen Vincent Benet. Illustrated by Charles Child. Farrar. 1933.

American history takes on life and color in these portraits in verse of fifty Americans who helped make it. A book of fine ideas and true associations.

Caddie Woodlawn. By Carol Ryrie Brink. Illustrated by Kate Seredy. Macmillan. 1935.

A story of frontier life in Wisconsin of the 1860's based on the lively childhood adventures of the author's grandmother.

Anything Can Happen on the River has a background of France and French life as experienced by the author.

California Fairy Tales. By Monica Shannon. Illustrated by C. E. Millard. Doubleday. 1926.

Charming, fanciful tales which spring from the desert, the mountainside and the deep forests of the high Sierras. Monica Shannon is a poet for whom all living things have a story.

Her Dobry (Viking), with its background of Bulgaria, received the Newbery award for the most distinguished contribution to American children's books published in 1934.

The Good Master. Written and illustrated by Kate Seredy. Viking. 1935.

One of the most popular of recent children's books. The lively Kate of Budapest who is the artist-author herself has re-created her own childhood experience on a visit to her uncle's farm in Hungary.

In The White Stag Miss Seredy has retold the epic of the migration of the Huns and Magyars in a text which brings it to life for boys and girls of today. Her drawings for this book are of great strength and dramatic power. It received the Newbery award in 1937.

Within the past two years there has come a clearer understanding of the nature of supervision. The emphasis is far different than it was formerly. It is constructive rather than negative supervision. In an attempt to define this difference we say supervision is an important phase of

educational leadership. Whatever plans are made, whatever work is done, the emphasis is on leadership. Specifically our attention is on ways in which we can improve the quality of reading service: Better ways to aid the teachers' and students' use of books. Supervision is a unifying factor within a large system, so that desirable practices are discussed, agreed upon, and carried out with a minimum of effort as standard procedure. New information or original ideas may be isolated in one school unless there is a clearinghouse, the function of which is to pass on to other schools desirable values. It is also highly important in raising morale to give generous credit to the individual who has made a contribution. In any large system improved ways penetrate slowly. Modern supervision attempts to counteract this tendency.

We have made a special effort to improve two aspects of the use of books: the teacher's attitude toward books, and better book selection. We believe one of the important needs is to enrich the principals' and teachers' attitude toward books. Without their interest in books and more knowledge of books we are restricted in reaching the children. With their interest in books the library immediately reflects the improved response on the part of the students. We strongly suspect this will continue next year and all their teaching years hereafter.

Since we cannot immediately reach all teachers we go first to new teachers and superior teachers. They in turn, by their alert interest in books, indirectly influence a few of the teachers who are apathetic or those who are firmly entrenched in old habits of teaching with one book. We make it a point to get acquainted early with all new principals. A responsive principal is invaluable in setting the school's attitude toward books. With the cooperation of the curriculum section the library presents institute programs for principals and teachers. A meeting on Book Week plans was given a month ahead to aid the schools in their plans, and a Hans Andersen Festival in the spring encouraged the reading of countless fairy tales.

We have found it valuable to have advisory conferences with curriculum supervisors, with principals, and with teachers. This was especially true the second semester as we prepared the budget and set up plans for the coming year. Strong, outstanding educators were invited. We sent them, ahead of time, an outline of points which were to be discussed at the meeting. With the superintendent's approval we met in the morning before we were tired and hurried. It was mutually helpful in several definite ways. It also improved friendly relationships because we had asked their counsel and they in turn were better informed on books.

We have in preparation material gathered from a number of schools,--principals, teachers, and librarians contributing,— which we hope will cause stimulating discussion in many faculty

meetings, on services which may be given by a school library. We are facing anew the important problem of orienting B7 and B10 students in the skillful use of books and the library, promptly after they enter high school. The teacher is the library's greatest aid, in seeing that the class assignments give purpose to the library orientation lesson.

In an evaluation of the use of books we recognize that many of the results are intangible. Briefly we are attempting to give a continuing interest in books which will be valuable to teachers and in turn to students. We are definitely trying to orient the principal and teacher in the available resources. Today supervision emphasizes the concept of working with others rather than over others.

THE PHYSIOLOGICAL BLINDSPOTS IN READING PROBLEMS

T. A. Brombach, Opt. D. San Francisco

There can be no doubt that reading, writing, and speech are not innate but acquired. Like all sensory impressions, the development of these functions depends upon a healthy brain and are the result of a great deal of instruction, imitation, and study.

In very much the same manner the efficiency of the visual mechanism, ostensibly built for distance perception, must develop comfortable visual pattern to perform detailed and speedy perception, transmission, and interpretaion and recoguition of the printed word at the short range.

The usual information available regarding the child's visual problems is the result of measurements of visual acuity, the ability to see or recognize certain letters based on a 1 degree angle at a distance of 20 feet. I am afraid that this routine information as to the child's visual problems must be considered inadequate. It does not offer a solution, nor does it present sufficient information regarding the potential visual difficulties which may retard the expected progress in acquiring desirable skills in reading.

I use the following analogy to demonstrate the various departments of visual activity:

Imagine an Occidental family living in the Orient. In order to maintain the proper prestige and to function smoothly this family must employ at least four native servants, each one expertly qualified by heritage, tradition, and experience to perform his particular duty so well that no interlacing or overlapping of their individual duties occurs. If all the domestics are performing their individual tasks efficiently, life in this household is indeed pleasant.

The No. 1 boy is especially qualified to assume all the duties immediately surrounding his white master and also the interior of the house. He has been taught to read and write. In keeping with the dignity of his high office he dresses in black and white.

The No. 2 boy will act as cook and assume other duties of a less detailed character within the confines of the household. He must often work in close cooperation with the No. 1 boy. To preserve the decorum within the household, he too, must dress in somber hues.

The No. 3 boy is the gardener. You can recognize him by his multicolored blouse and the flower in his cap as he goes about landscaping the estate with flowers and shrubs.

The No. 4 boy is the watchman over the household and its members. He is stationed at the main gate to keep out unwelcome strangers and to warn of approaching danger.

In case of sickness or temporary absence of the No. 1 boy, the No. 2 boy and No. 3 boy may assume part of his duties but will never attain the high efficiency of the No. 1 boy.

A similar arrangement exists in the household of visual activity. Instead of calling them boys, let us name them departments.

Department No. 1 is anatomically and physiologically endowed to observe with minute detail form and line, letters and figures in black on white or white on black. This most sensitive part of the retina, the fovea centralis, occupies an area of not more than 1/5mm in diameter. It does not see color or motion.

Department No. 2 occupies an area immediately surrounding the fovea centralis, covering the peri and possibly part of the para central portion of the retina. It is interested in the perception of contours and outlines of form in a stationary position but especially when associated with motion. This department works with the closest cooperation with department No. 1. If impaired or restricted, the high efficiency of department No. 1 will be seriously retarded in reading a printed page.

Department No. 3 deals with the perception of color in a stationary as well as in a moving position.

These three departments, although functioning individually and independently, work in synchronized harmony.

Department No. 4 deals with the perception of motion only and recognizes motion regardless of the color of the object. The principal duty of the department, very much like the duties of the No. 4 boy in the Occidental household in the Orient, is confined to the protection of the eyes against injury. Impressions received in the area controlled by motion-perception only, when transmitted to the higher centers of the brain, appear to arouse only one reaction, the protection of the eyeball by closing the lids. Associated reflex action, such as the tilting of the head or the holding of a hand or object before the endangered eye, may be attributed to this department.

Clinical experience has definitely established the fact that all four departments just mentioned are individually independent.

It is possible partly or completely to impair department No. 1 without decreasing the efficiency of the other three departments in the slightest degree. Department No. 1 may be partly reduced in efficiency by myopia. It may be partly or completely destroyed by a central scotoma. Again department No. 3 may be partly or completely destroyed by degrees of color ignorance, deficiency, or blindness without the slightest decrease in the efficiency of the other three departments. In some cases due to trauma following head injuries, department No. 4, the perception of motion, may be entirely destroyed without interferring with the other activities. Fortunately, this

latter condition is comparatively rare. A person thus afflicted may be able to see a letter at the distance of 20 feet, manifesting 20/20 visual acuity, but will find it extremely difficult to read with any degree of comfort.

The development of these various departments of visual activities would be comparatively simple if only one eye had to be considered, but ordinarily synchronized control between two eyes must be developed and maintained.

Binocular control of these various functions meets with many obstacles during the formative period of the child. The principal visual difficulties responsible for slow progress made in acquiring reading skill are those produced by interference in maintaing comfortable control between the two eyes.

The child must be considered as a functional entity in the process of development. Empirical optical rules, based on experimentation at a physicist's bench, may be valuable but do not offer a solution of the problem in a vast majority of cases, and if rigidly applied may often become a hinderance rather than an aid.

The visual mechanism in its development will always endeavor to adapt itself to its environment. During this process, unless abnormally excited, it will always follow the path of least resistance. If the act of maintaining binocular control becomes too burdensome then efforts to suppress vision in one eye may be made. If the final object of this endeavor, elimination of the visual impulse in one eye, has been accomplished and the retina of the fixing eye is normal, visual reasons for any existing difficulty in acquiring the art of reading may be eliminated.

Complete elimination of visual impulses in one eye, in a child with otherwise normal eyes, is rather a difficult and complicated problem. The basic binocular pattern in a child who is acquiring the art of reading usually is so firmly established and has been associated with so many correlative brain activities, that complete suppression of one eye, although offering definite relief in cases of binocular dysfunction at the reading range, is rarely accomplished.

The investigation of potential visual reasons in children manifesting difficulties in acquiring normal reading skills is obviously important.

The most important cause of binocular dysfunction at the reading range is improper posture.

(A) Reading at too close a range with both eyes directed at the page.
(B) Head resting in palm of right hand, elbow on table.
(C) Head resting in palm of left hand, elbow on table.
(D) Ocular Dysfunction caused by anisometropia (a difference in the refractive system of the two eyes).

(E) Manifest or latent strabismus.
(F) Improper or partly developed binocular control pattern often found after surgical correction of strabismus.

(A)

Reading at too close a range with both eyes directed at an equal distance from the eyes to the printed page. This poor posture must be considered as the most frequent cause for the ever-increasing number of young people developing school myopia, which so often assumes a progressive stage, demanding periodic increase in the strength of the lens correction.

Proper application of the simple posture rule to teach young people the art of reading at the standard distance will greatly reduce the number of children needing corrective lenses to see clearly at the distance range.

The proper reading posture suggested by results obtained in clinical practice is as follows:

The reading matter should be held at a point equal to the distance indicated by the right angle position of the arms, sitting erect, the book held in their hands, elbows on the table. This offers an individual reading posture permitting comfortable binocular function.

The progressive stages of myopia can be arrested in many cases, and myopia may not manifest itself in many children if this proper postural reading position is applied at an early period.

Let us assume a case of a girl 7 years of age. Her record of an eye test made six months before shows 20/20, or normal visual acuity at 20 feet. Now, her distance vision is considerably blurred. She is no longer able to see writing on the blackboard. An eye test made with a Snellen chart reveals that a lens correction of -1.00 diopters is needed to restore normal distance vision. After wearing this correction for a period of three months, distance vision again becomes dim and in order to see clearly the corrective lens power has to be doubled to a -2.00 diopters. Six months later another increase in her lens prescription is necessary.

I believe every teacher in the elementary and high school grades will recall similar experiences. My clinical experience with thousands of children permits me to make this statement, that the real cause of the manifestations of myopia, in the case presented above, was never discovered. It was treated in a purely mechanical manner as a distance visual problem instead of a problem caused by poor posture at the reading range. If properly analyzed and corrected as a postural problem at the reading range, this girl might have recovered her ability to see clearly at the distance without corrective lenses. At least the subsequent progressive stages of myopia could have been prevented.

It is obvious that young people developing blurred distance vision, then wearing a lens correction to restore clear visual perception at distance, will maintain the same improper reading posture unless very definitely instructed to read at the proper distance. If the improper reading habit is not altered, the visual mechanism is again confronted with the same difficulty responsible for the first manifestation of apparent near sightedness, and will adapt itself to the improper reading posture, demanding stronger and stronger lenses in order to maintain clear vision at the distance.

This process often continues until the focal length of the lenses corresponds with the distance from the eye to the printed page.

(B)

Head resting in palm of right hand, elbow on the table, the position of the right eye being closer to the printed page, the left being farther removed and partly but not entirely excluded. The vertical separation of the two eyes produced by this posture makes binocular comfort practically impossible and definitely increases the burden of maintaining synchronized activity between the two eyes and obviously retards progress in mastering the art of reading.

This posture may be assumed for two particular reasons. First, if comfortable binocularity is difficult to maintain, then the adoption of this posture by the child may be looked upon as an effort to seek relief, the ultimate object being suppression of one eye. If binocular function under correct posture is normally developed, then this improper postural habit may seriously interfere with the orderly function of two-eyed perception and in producing periodic horizontal and vertical diplopia may seriously handicap the child in his ability to read.

From a clinical point of view we may safely consider this improper reading posture the primary reason for visual difficulties interferennce with the proper advance in reading efficiency in young people.

The strongly developed desire to adapt the visual mechanism to the existing environment, coupled with the inability to exclude one eye entirely from binocular usage, may be responsible for another interesting phenomenon, the development of large non receptive areas surrounding the physiological blindspots in both eyes. Second, one frequently finds in clinical practice persons of a more or less phlegmatic nature who have successfully solved the binocular problem caused by this improper postural habit during the formative period by developing one eye for reading, the other for distance usage. If the right eye has been used about 10 inches from the printed page, and if this improper posture has been maintained over a period of time, myopia of -4.00 diopters, focal length of 10 inches may develop in the right eye and normal vision in the left eye may still be retained. This abnormal arrangement, directly opposed to text book theory, may be quite comfortable and represent a more or

less successful endeavor on the part of the growing child to solve his visual problem. If firmly developed, visual reasons for reading difficulties are eliminated

This ocular arrangement may permit a person to go through life without the aid of glasses, using the left eye for distance and the right for reading purposes, or vice-versa. A careful optometric investigation, however, is necessary in cases of this type. Such investigation may often reveal that simultaneous usage of both eyes is not entirely eliminated. Motion and color may be observed with both eyes, but the perception of form and line in black and white may be restricted to one eye at a time.

(C)

Head resting in palm of left hand, elbow on table. The left eye being closer to the printed page than the right eye will cause a reaction similar to that related in (B).

(D)

Ocular dysfunction caused by anisometropia (difference in the refractive status of the two eyes). It is often responsible for similar postural habits at the reading range and requires careful ocular investigation. These ocualr anamolies must be corrected befor efforts are made to change postural habits.

Large non-receptive areas surrounding the physiological blind spots in both eyes are often recorded in these cases.

(E)

Manifest and latent strabismus will produce similar postural habits. There are obviously visual reasons connected with the difficulties in acquiring reading skill if binocular function has been partly but not entirely destroyed.

Many cases of this distressing cosmetic defect must be considered as the result of an endeavor made to eliminate difficulties encountered in developing or maintaining comfortable binocular control.

If one eye has been completely eliminated from binocular usage, as in cases of alternating squint, then any evidences of reading difficulties observed in a child are due to other reasons. In cases of this type no enlargement of the physiological blindspots is found.

There are a great many cases of crossed eyes where the binocular desire still exists, making binocular perception very burdensome, regardless of the interesting methods used by the child to suppress one eye. One of the most common ocular phenomena caused by a determined effort to suppress the deviating eye is the condition called amblyopia exanopsia, or dimness due to none-use. Visual perception in the deviated eye is often reduced to an acuity below 20%. This

applies only to foveal activity, detailed perception of form and line in black and white, and does not seriously impair motion and color recognition.

Here again, we find binocular difficulties resulting in head tilting and improper reading posture, large non-receptive areas surrounding the physiological blindspots in both eyes, and, naturally, visual reasons for reading difficulties.

It is most interesting to observe the rapid restoration of lost visual acuity in true cases of amblyopia exanopsia. The child is sent to a talking picture, the good eye is occluded, the amblyopic eye only is permitted to watch the picture. The continuity of interest aroused and maintained as the plot appears on the screen constitutes maximum visual stimulation and the picture may be recognized for a short period of time. The interest, however, will soon fade and the picture will be no longer visible, due to the persistent effort, maintained over a period of time, to ignore visual perception or recognition of stimuli from the amblyopic eye. Silent motion pictures, therefore, do not help very much. With the coming of the talking pictures an excellent method for restoring visual desire in an eye dimmed by non-use was discovered. Due to the correlative influence of the auditory sense excited by sound and synchronized with the story projected on the screen, a more or less constant interest is maintained and in many instances normal vision is restored after attending a few performances.

After restoration of visual acuity, in a great many cases of concomitant strabismus, intelligently applied corrective procedures will produce satisfactory results, provided proper posture is applied at the reading range.

(F)

An improper or partly developed binocular control pattern often found after surgical treatment and correction of strabismus.

The surgical correction of strabismus may often eliminate the cosmetic defect but in many cases improper or partly developed coordination between the two eyes remains. Naturally, the same difficulties described in the previous paragraphs may exist.

When reading difficulties are present the improper posture habits adoped in an effort to eliminate the burden of maintaining comfortable binocularity (enlarged blind areas surrounding the physiological blindspots in both eyes after a short period of use at the reading range) will be found.

While I am a firm believer in the value of precise correction of refractive anomolies when needed, I cannot subscribe to the current opinion that minor types of hypermetropia, myopia, or astigmatism are responsible for reading difficulties in children in the elementary grades. In my opinion, it is definitely a binocular problem and not dependent in the vast majority of cases on small refractive

errors. Therefore, I present with confidence the results of recent optometric research which provides the educator interested in remedial reading with a simple screening method.

If properly applied, satisfactory evidence of visual disturbances which retard the normal response to the standard methods of teaching the art of reading can be charted by the teacher in the classroom.

In 1668 Marotte discovered the physiological blindspot in the human eye. It is located on the nasal side of each eye, and its size is fairly well established. It is caused by the admission of the optic tract into the eye and is totally blind to all sensations.

Enlargement of the blindspots have been associated with certain types of pathology and do represent today very important clinical information regarding early stages of glaucoma, etc.

Most of these pathological activities responsible for enlargements of the blindspots occur in adult life. In young persons of school age these enlargements produced by certain diseases are rarely found. The discovery of large non-receptive areas in young persons during the formative period, developing after usage of both eyes at the reading range and disappearing when reading is discontinued or when one eye is occluded, adds not only to the general knowledge but presents an excellent screening test in reading problem cases.

Enlarged blindspots in both eyes reducing the area of visual perception will not permit satisfactory results in intelligent reading unless their causes are analyzed and eliminated. A very simple method will establish the status of enlarged blindspots.

(A) If they are physiological in character and are produced by the higher centers of the brain to permit comfortable ocular usage at the reading range, they will disappear after occlusion of one eye for a short period.

(B) If they are the result of pathology, they will not disappear unless the etiology is eliminated. The enlargements are present regardless how long one eye is occluded.

These functional enlargements may develop in cases of improper or uncomfortable binocularity during the process of reading. They do not appear when the eyes are used for distance purposes, in alternative strabismus, in one-eyed vision, and rarely during writing.

The physio-psychological factors involved in the appearance of this phenomenon have not yet been investigated, but the positive and direct relationship between these large non-receptive areas and reading problems appears to be proven without the slightest doubt.

In addition to my own clinical experience the excellent work done by Miss Bertha Dow, of the elementary schools in Fontana, offers sufficient evidence of the presence of these enlarged areas surrounding the physiological blindspots.

RESULTS OF DOW SURVEY

Total number of children examined	158
Total number of children with enlarged blindspots	109
Total number of children recovering after occlusion of one eye	83

All of these children were classified as poor readers and the only corrective measures instituted were closing of one eye and correction of reading posture. No investigations relating to their visual acuity and binocular control were made.

BLINDSPOTS IN CHILDREN'S EYES

In office or clinical practice a campimeter or tangent screen is employed to make this test. It consists of a flat surface, either a screen made of black cloth or an ordinary blackboard. In the center is placed a fixation target, often a white spot with a black cross. The size of the fixation target should be in harmony with the size of letters used in the elementary grades.

TECHNIQUE OF MEASUREING BLINDSPOTS

The technique is as follows: One eye is occluded, and the patient's open eye is placed in line with the fixation target at a distance indicated by the size of the screen. The child is then told to look at the white spot, never to lose sight of the fixation mark. While the child's attention is thus fixed on this spot, the target-holder is brought into position between the blindspot and the fixation point. Upon questioning, the child will decide if two objects are seen or one. Again the child's attention is directed toward the fixation mark, and then the target is moved outward until it disappears completely. If the target cannot be seen, it is evident that the object falls within the blindspot. Again impressing upon the child never to lose sight of the fixation mark, the target is then moved in various directions - up, down, in, and out, until the child can detect its presence in the field. These various points are marked and represent the extent of the blindspot. For finer measurement a smaller-sized target is utilized.

SUGGESTION FOR BLINDSPOT MEASUREMENTS FOR TEACHERS

In office practive blindspot measurements are usually made on a black surface with a white target, and while they may represent the result of careful calculations on the part of the technicians, I suggest a departure from this method of procedure. A white card, 9" x 13", the size based on a distance of 12-1/2" from the eye to the fixation mark, with blindspots marked at the proper angle, is suggested. The card should be placed on the school desk. The only measurement necessary, therefore, is the distance from the eye to the mark of the test chart which must never be altered. The fixation mark can consist of the letter "X"; with the size to be determined by the grade of the child under examination. Then a thin strip of white cardboard

about 1/4" in width is utilized. One end contains a black mark 5mm. in diameter; on the other side a black dot 1mm. in diameter--letters can be used on the other end. This target then is moved by the teacher as indicated in the previous paragraph. A pencil is used to make the marks. Other data necessary are the name, the age, the grade, the date, and the time of day at which the tests were made. This method will approximate natural reading conditions, and the results will closely resemble those obtained in office practice.

PRACTICAL CLASSROOM PROCEEDURES IN SECONDARY READING

Mrs. Mabel Vinson Cage, Los Angeles

Knowing how to read has always been the demarcation line between literacy and illiteracy; hence to be educated at all one must know how to read. The ability to read was taken for granted for many years, so that when a boy or a girl came to the high school level, he was expected to spend his time and effort learning mathmatics, science, or the classics. But for two decades now we have been herding into our schools all of our younger population from all strata of society, not only those apt students whose ability made a good education an expected right, but also those who think slowly and learn slowly. Such a mixture of abilities and backgrounds has thrown into our great school system problems that no schools in the past have had to face. From the resulting confusion of theories and practices one fact is inescapable: that if a student learns anything from books, he must learn to read. Moreover, we have found that many of our students in the secondary school, even those of an average intelligence or better, do not read well.

Then, too, we live in a different age. Ours is not the leisurely reading of a few books. We live with dash and speed, and so do the boys and girls in our schools. Fast travel, radios, and excitement do not foster quiet study. If students keep up with the day, they must read a book quickly, they must skim the newspaper, or they must get a hard lesson in a short time. Our problem then is to help all of them to develop their very highest reading power. Many schools have established special reading classes for slow groups, sometimes at the expense of teacher time for the bright ones. After all, the bright and average students are certainly as deserving of our best as the slow ones. To me it seems logical that <u>every</u> English class should be a reading class. I believe, too, that it is a mistake to segregate reading instruction; a class that is learning to read should also be learning how to write and how to speak. If a child adds a word to his reading vocabulary, why not also have him learn to spell it and pronounce it.

For the regular teacher of an English class there are four paths of approach to this problem of reading: First, helping to give the student a background which will make reading easy and desirable; second, teaching him how to read, with demonstration and actual practice of mechanics in class; third, directing the student in the technique of hard study; fourth teaching him what to read and stimulating his desire for worthwhile books.

At the beginning of any reading program, the student must be made aware of his problem and of its importance. In any successful learning, a student must <u>want</u> to learn; any effort without that desire is futile. Most students will try if they realize that they are learning something which will be of definite advantage to them. It is most important, then, for the teacher to create the desire for improvement in reading, and to make the students believe that they can improve. Encouragement is a strong factor in progress. Every little improvement must be recognized and praised.

Both students and teacher must realize that general knowledge will make any reading easier. A student cannot read very intelligently about a subject of which he has absolutely no knowledge. A doctor reads his medical journal and a lawyer reads his law books, which most of us would understand but little. Then, everything that a student learns helps to increase his reading ability. He should learn to be observant, listen with attention to intelligent conversation, travel when he can, listen to radio programs and see movies which will really do something for him, and read all the good books he can. HE MUST TRY TO REMEMBER. There is no quick scheme for becoming a good reader. It takes time, but there can be day-by-day improvement and eventually very definite progress.

It is a good thing to teach in class the actual mechanics of reading. Show the students how their eyes jump across the page, and how they swing back. They must learn to increase the eye-span, by making an effort to take big eyefuls. This goes far in developing speed. Try to eliminate such baby habits as pointing with the finger or moving the lips in silent reading. Sometimes there is just a little throb of the lips, tongue, or throat, which is hardly noticeable, but which does retard the rate of silent reading. The eye and mind must be able to swing freely across the page. Urge children to try to read faster, but also emphasize the fact that speed is not paramount.

Many children already read very rapidly, but many of them skip so swiftly over the lines that they do not always take in the significance of what they read. Understanding is of course the most important, and there should be exercises to check up on the child's understanding. The discussion of possible different interpretations of a sentence helps to show the class that sometimes one reads into a passage his own experience. Readers should actually make an effort to visualize what they read, to make a mental moving picture of events.

Vocabulary building is important. There can be no reading without the understanding of words, and the more words one knows the better equipped he is. There are several ways in which to develop greater vocabulary. Learning the common prefixes, suffixes, and stems helps in analyzing new words. A study of a family of words from one stem is enlightening and a rapid method of study. Attention to similarities and differences in words helps to an understanding of them. Word games and contests are interesting. Of course, children should be taught the use of the dictionary, but there is no virtue in just looking up words. One helpful method is to give a list of ten or twelve words just before a reading lesson in which they occur. Discuss them with the children, use them in sentences and let the children copy them for further reference. I give them simple definitions and have the class pronounce them together. Then when they begin to read they find the words understandable. Discussions and tests after the reading are essential. If students are observant, they learn many words from the context of their reading and from hearing them on the radio or in conversation. Keeping lists helps some.

In considering hard study, students should be urged to try harder. Most of them really don't try hard enough. Then they must learn to shut out the distractions of modern life and concentrate. Good hard work will do more than anything else. Keeping simple outlines or notes is a good method of reenforcing the memory. For most children, the text books in school are th hardest reading they encounter. It is a good idea to suggest getting a small working vocabulary in the very beginning of the study of a new subject text in [illegible] school. Even twenty words will be a distinct advantage in reading the first chapters. Students should be urged to try more grown-up books. Bright students often read books far too childish for them.

All this effort in class is just about wasted unless the student acquires a real enjoyment of reading good books. One way is to make the books easily available. If an attractive book is right under his nose a boy may pick it up and become interested, but if he is told "to get one at the library," it may be too much effort to overcome his indifference. A cupboard library open to him at any time when he has a few minutes right in his own class room may be the most powerful stimulant to actual reading. Then a book must be interesting enough, and easy enough to read, but not too easy.

I have found the service at our school library at Polytechnic most helpful. Any student in school may take out books without going through the routine of getting a card or making an application. That helps, for he's ready to take out books the first time he visits the library. Then if I am taking a class to the library, the librarian will collect ahead of time any material we may need and it will be waiting for us. Or, if we wish to discuss books in our own class, the librarian will send to our room any number of books that we wish to use. Talking briefly about a book and actually showing it to the students often turns the trick.

When I take a tenth grade class to the library, I try to prepare them carefully before going. I expect them to read as much at home as their time and circumstances will permit. I urge them to read widely, almost anything in our school library that interests them. When we get to the library, I have placed on their tables books which the librarian and I have previously selected -- the most attractive and interesting on the shelves. I ask them to look over the books quietly to see if they can find one that they would like to read. They are expected to sit down and try reading a book. Many of them never stop during the period, but they know that if they have not found a book they like withing fifteen or twenty minutes, they are at liberty to go to the shelves and hunt for themselves. If they are unable to obtain a book satisfactory to themselves, they may come to me or to the librarian for help. Naturally if a boy runs too much to western's or detectives, I offer him something else and ask if he has read this. I suggest that always reading one kind of story is like eating a whole meal of chocolate cake. Often students make recommendations to each other. The point is to get them to read something and then try to improve their taste by offering "something interesting." A little joking or teasing of their curiosity may tempt their

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interest. In discussing a book, tell just enough, but not too much.

If, however, I am asking a class to read for definite information on definite subjects, they must know before going to the library just what I expect of them. Sometimes assignments are given partly to help familiarize them with the technique of finding material. In that case, the librarian and I merely direct the student toward the sources. But if time is limited and every minute precious for reading, the librarian and I may have placed on a truck or on their tables the reference books or study books which contain what they need. We even slip in little slips of paper to mark the places. The children know that if they are there for research they must keep accurate notes.

There is an advantage in having reading material at times which all of the class may read at the same time as a basis of discussion. Such class discussion after reading may be a revelation to some students of the shallowness of their own comprehension. They may have missed something important. Some of the magazines are good for this work (I prefer Scholastic). I know that in a thirty minute reading period some will read twice as much as others. Before we begin, I have listed on the board four or five articles to be read in order of their preference. I urge a little speed and those who finish the assignment before the time is up, may read anything else they like, even "Boy Dates Girl" or the jokes. Then we have a grand time discussing up-to-the-minute problems. This is wonderful practice for adult news reading.

Sometimes a class may be turned into a book club once in two weeks, with the chairman presiding. Reviews should certainly be interesting and may be made by students or guests. The old fashioned book report has been quite generally disliked, but I should urge students to keep some kind of record for their own use, a notebook with a page for a book or a little card file of their own. The record should be merely the title, date, and a paragraph of the student's own impression of the book. Such a record should be most interesting in later years. In my own desk I keep a large file card for each student. Once a month he records on it the title and author of every book that he has read during the month regardless of what it is. Emphasis should always be on the joy of reading and the interesting content.

If a teacher loves books herself she will find it easy to be enthusiastic about the children's reading. Have some fun about this. Don't take the reading program too seriously; let the children feel that it is just about the best thing that has come their way. Know about all the lovely new books for your grade and help your librarian to choose them. AND READ THEM YOURSELF. You have to, to put them over with the children! Above all give praise for any show of improvement. If a child has read a book a bit difficult for him or one especially worth while, let him (and the class) know that he has really accomplished something. Don't be surprised if they begin to bring you books. You may have to hurry to keep up!

NEURO-PSYCHIATRIC PRINCIPLES IN EDUCATION, COUNSELLING AND THERAPY

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Considerable confusion exists in the minds of professional and lay people alike about the theoretical claims and practical applications made by an increasing number of workers variously labelled as psychologists, counsellors, guidance and personnel experts, psychoanalysts, psychiatrists, etc., in the fields of child development, scholastic education, industry and in the like. The confusion is increased by lack of adequate definition of the differing functions of these workers, and their techniques, and particularly by their own apparent confusions and differences of emphasis as reflected by their statements, writings, and working methods. Incompatibilities in their theoretical assumptions and in their techniques, controversial issues between schools, the all too frequent failures to affect the practical results which their theoretical constructions would appear to promise have the tendency to impair the confidence that parents, educators, and administrators, under the pressure of practical problems, would like to place in these workers. Too much is expected on both sides; disappointments follow.

It is the purpose of this article to call attention to some of the factors involved in this complex situation, less by criticism of individuals or groups than by pointing out certain fundamental misconceptions or assumptions the unwitting operation of which has led to the confusions and inadequacies characterizing the earlier work. As the elimination of obsolete assumptions can only be justified by the substitution of new ones more adequate to the problems involved, the outlines of certain, useful, new orientations will be given. A great deal will sound familiar, scarcely new at least, and the question will be raised why much of the good in the old has been unproductive of useful results. And as theory and practice are, and must be, inseperably linked, certain new techniques which represent the application of new orientations will be sketched

Underlying any scientific system, (or for that matter political, economic, religious, and other systems), there can be found certain assumptions which both direct and limit the activities of the functioning system. Variously labelled as "doctrines," "principles," "metaphysics," etc., they may appear to vary from system to system from one human activity to another. Not only are they intimately interlocked, interdependent, they appear on analysis in may instances to be variations on even more fundamental theses. The more basic assumptions, (spoken of as 'system-functions' by Alfred Korzybski*), from which specific doctrines are derived, are often unconscious and hence defy ready

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*Science and Sanity. An Introduction to Non-Aristotelian Systems and General Semantics, The Science Press, Lancaster, Penn.

analysis. Therein lies their danger. Operating automatically, insidiously, in all human evaluational processes they even determine the choice of instruments for their own investigation. The results of this are perhaps less satisfactory than trying to work stone with stone implements. These unconscious assumptions, the heritage of our primitive reactions to a limited, pre-scientific world-picture, not only limit but mislead us.

Consider, by way of examples which are appropriate to the topic of this article, the activities, including verbalizations, of scientists whose assumptions include the notions of the separate existence of "subject" and "object", "cause" and "effect", "body" and "mind", "intellect" and "emotion", "heredity" and "environment", etc. While they will often enough give lip-service to emergent notions represented by the terms "organism-as-a-whole", "organismal-environmental unity" and the like, they usually betray their unwitting adherence to primitive assumptions by setting up artificial boundary lines, parcelling, over-specialization, generalizing from the part to the whole, reduplication of entities, and the like. Psychologists, of the old schools, have been the most misled. Branching off from 'philosophy' they set out, often by cleverly devised methods, to determine the boundaries, etc., of "faculties" which were mere verbal fictions produced by "philosophical" speculation and other forms of gambling with words. Even psychoanalysts whose derivation from medicine and neurology in particular forces them to have plenty to say about the "organism-as-a-whole", continue to operate according to a doctrine, the two-valued, dichotomous, structure of which is traceable to the most primitive origins both in the individual and the race. Inevitably these assumptions have led to parcelling, to the creation of entities (verbal fictions again), which make the present Freudian doctrine of "psychic" forces astonishingly similar to archaic pantheistic doctrines. Naturally enough such a scheme not only confuses students but hinders preventive work and therapy.

More difficulties of this nature are to be found in the bio-social sciences than in the physical sciences. In the latter group new instruments and methods of investigation have been aided by the development of mathematical languages which permit greater accuracy of representation and greater flexibility than has heretofore been possible by ordinary language. Mathematical languages vary in their structure, their way of relating relations, according to the needs of the situation, the facts of observation to be represented. One set of assumptions determines one mathematical structure, another a different one. The formula, one plus one equals two, applies to adding one glass of sand and one glass of sand, but not to one glass of sand and one glass of beans. Assumptions, as in

the example given, implied in the structure of languages, may not be in agreement with realities. Such is often the case in the bio-social fields of study where, with the exception of some biological sciences which are marginal to the physical sciences, implementation of research techniques has not been so rapid and workers are practically restricted to the use of ordinary language for purposes of representation and communication.

Although new terms are produced with facility to represent new structural observations, they are too often embedded in an old linguistic matrix, the structure of which is based on inappropriate assumptions. Take the statement, 'Smith 1 has an anxiety neurosis because Smith 1 is a Jew.' Complicated and useful psychiatric and sociological abstractions are implied but the traditional syntactical arrangement produced by the verbs to have and to be, among other things, contains the assumptions of additiveness in the case of the substantive label for a disease 'entity', (and this notion, by the way, underlies demonological, animistic, medical doctrines), and identification in the case of the social classificatory term. Such a statement, if uncritically evaluated, implies many false-to-fact relations such as that a discrete part of Smith 1 is an anxiety neurosis, produced by his being a Jew, and that all Jews are anxiety neurotics, etc. A more accurate, less misleading statement, might run as follows: 'John Smith is neurotically anxious at the present time because, among other factors such as character structure, etc., he is socially classifiable as Jewish.' Thus, the very structure of our ordinary tongue may distort what we mean to convey, mislead ourselves and others (students, patients, etc.) and actually restrict our horizons of investigation.

It is important to realize that scientific progress is inseparably bound up with its medium of communication. This is the principal reason for the recent accelerated progress of the so-called physical sciences. They utilize mathematical forms of representation both as instruments of communication and of investigation. The structure of mathematics is adjustable so that it can be made to correspond to the structural relations observed in the facts under consideration; the representational formulae for surfaces are not applied to volumes. Mathematical postulates or propositions vary with the data and needs of the situations wherein they are useful for communication, prediction, etc. Ordinary language, the principal medium of expression of psycho-logics and socio-logics, etc., derives what flexibility it possesses from the richness of metaphor which, by mechanisms to be discussed elsewhere* convey the crude 'feel' of some situation. But, as suggested above, its structure,

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*Forthcoming technical paper

largely determined by rules of syntax, traditional 'logic' as it is, is too rigid and tends to perpetuate false-to-fact structural assumptions. This insidiously tends to produce the Procrustean habit of making facts fit theories, of interpreting life phenomena in the light of obsolete doctrines, etc. The bio-social sciences are today a melange of unrelated and incompatible doctrines, assumptions, primitive animistic notions alongside emergent ideologies derived from mathematical physics, a confusion of tongues which threatens to impair their usefulness at a time in human affairs when they are most needed.

The solution of this problem does not lie so much in the development of refinements of terminologies, application of mathematical methods and language or syntactical changes of ordinary tongues as some would suggest. While these contributions are important it is more likely that methods of solution will be found by re-working much of the assembled, descriptive data from the various bio-social sciences in the light of certain new orientations derived partly from within the field and partly from seemingly remote areas of investigation. To the work of Einstein, Pavlov, Freud, and Korzybski, to select these names as figureheads of groups of more or less integrated investigators, may be attributed new orientations and methods which are leading to a new, synthetic, science of man. The principal lines of development of this emergent science will now be described, lack of space preventing anything but the merest outlines.

Einstein may be considered the founder of non-Newtonian physics. His methodological innovation was this: where previous workers had disregarded the unavoidable delay in recording of observations, due to the finite velocity of light, or any other signal (in other words the fundamental environmental factors unavoidable in any instrumental recording or observation), Einstein included the finite velocity of light or signals, etc., and thus built up a relational system free from so-called 'absolutes' and hypothetical entities like 'forces', 'space', 'time' and other elements. His friend and follower, the mathematician Minkowski, developed an adequate, four-dimensional, mathematical technique and coined the term space-time which avoided the elementalistic structural implications of 'space' and 'time'. As the observer is part of every observation he makes (and reports), science of any kind comes to be the formulation of relations between the observer and the observed. Objects, or individuals, do not exist in isolation. Structure is describable only in terms of relations and order, often highly complex and multi-dimensional. Thus knowledge becomes structural and language, to serve its purposes of communication and prediction, must be structuralized in such a way that it is similar in structure to the relations, order, etc., of the observations.

Pavlov and Freud approached the problem of the human neuro-psychic constitution by techniques which, though radically different, have led to complementary findings lacking only a general theory to harmonize them. The conditional reflex technique of Pavlov made it possible to study neurophysiology in the living organism and was predicated upon the integrative, unitary, responsiveness of nervous systems. It demonstrated that sub-human forms of life had organismally determined limits to the number of orders of conditioning stimuli whereas human beings, if healthy, had apparently unlimited degrees of conditionality. Thus human reactivity has the potentiality, at least, of indefinite flexibility: primitive, infantile, or other responses to environmental stimuli which are for various reasons inappropriate for survival may be repatterned, redirected toward new goals, by conditioning them to higher orders of stimuli. Pavlov's followers, notably Ischlondsky*, have shown that the ma-

*Neuropsyche und Hirnrinde: 2 vols., German. Under the titles: The Conditioned Reflex and Its Importance in Biology, Medicine, Psychology and Pedagogics; and, Physiological Basis of Profound Psychology. Urban and Schwarzenberg, Berlin, 1930

jority of human conditional reactions are governed by symbols of which words form the greatest number. Pavlov himself has said, '____ men are apt to be much more influenced by words than by the actual facts of the surrounding reality ____.' But 'thoughts', 'images', 'memories' and other symbolisms belonging to the internal, neuro-psychic, environment can be effective stimuli governing conditional reactions so that it is increasingly evident that human behavior must be considered conditional upon indefinitely high orders of symbolic abstractions and capable, therefore, of pathological independence of factors in external reality. And human beings alone can represent their higher abstractions -- 'thoughts', etc. -- by extra-neural means which may be accumulated to build up a symbolic environment which, in turn, may govern conditional reactions in contemporary and subsequent generations of people.

Freud's technique of 'free' association led to the discovery of so-called unconscious mechanisms governing human behavior. It was a clinical method, with therapeutic aims, based on the assumptions of biological, inherited, instincts which, hampered in their free expression by 'civilizing' forces, became modified, even transformed, but remained as sources of constructive or destructive conduct. Adult behavior patterns were, in general, considered to be repetitions of infantile reactions, the source of which was to be found in the impressions formed in infancy and stored in the 'unconscious'.

Debatable as Freudian doctrine may be, the chief merit of his investigations was to demonstrate the symbolic character of the determinants of human conduct. Analytic technique, coupled with other psychiatric methods, shows that human reactions are conditioned upon 'impressions', 'notions', 'thoughts' and other factors of psycho-logics. An internal environment of such factors determining conduct may have their origin in past experience, 'instinctual drives', 'wishful thinking', etc., rather than in immediate, correct-to-fact, evaluation of external realities. Illusion, delusion, and other distortions of data essential for survival result through well-known mechanisms of identification, projection, etc. Our individual and general idiosyncrasies of representing 'reality' to ourselves, (symbolization) are responsible for personal and social disturbances. Freud, like Einstein, also demonstrated the important role of the observer (physicist or psychotherapist) in observation or treatment: relationship, ('transference') became the aim of study.

Korzybski, a mathematician and engineer, synthesizing for the first time the contemporary knowledge in the physical, mathematical and bio-social sciences, formulated a general science of human evaluation called General Semantics.*

*See Manhood of Humanity, New York; and, Science and Sanity. An Introduction to Non-Aristotelian Systems and General Semantics.

Semantics, from a Greek root meaning signification, has been described roughly as a science of word-fact relations in comparison with 'logic' which deals with word-word relations and 'science' which deals with fact-fact relations. The term evaluation, as shown by Korzybski, is broader, more general, than meaning or signification, includes them, and covers those very processes by which human beings obtain, transmit, and react to their varieties of knowledge. A general theory of evaluation, i.e., General Semantics, would be fundamental to all human activities and of particular importance in education, psychiatry, etc., as the researches of Pavlov and Freud, mentioned above, would indicate. Symbols represent evaluations of some type or order and human reactions are dependent upon those evaluations. It is a question, then, whether the evaluations have or have not survival value for human life.

Neuro-physiology, a biological science, has shown that nervous systems are constructed and function in an ordered series of 'levels', through which at a finite velocity 'flow' complicated electro-chemical processes spoken of as nervous

'currents'. Beginning at the so-called sense organs, (e.g., tactile, temperature, and light "receptors"), an indefinite variety of happenings such as radiant and mechanical energies are transformed, in part, into nervous chains of events. At various levels throughout the nervous system, further transformations in these electro-chemical processes take place. Each level, or region, reacts to certain characteristics of the nerve "current" and transmits new features, new energies, to other levels or centers. Thus the "emotional" levels of the thalamic region abstract certain characteristics and produce the affective components of so-called "perceptions", while other areas localize or abstract modalities of 'sensations', etc. The important point seems to be that certain areas or levels abstract certain characteristics of the original nervous 'current' and transmit reactions to those abstractions to still other levels in such a way that "analysis" of incoming nervous data guides the reactions of the organism-as-a-whole to its environment.

At human levels, abstractions reaching higher centers, are synthesized into 'imagery' of various types. These are representations of abstractions made by other centers and, being themselves physico-chemical processes, may remain in "storage" as "past experience", etc. Finally, these imaginal forms of representation may be further abstracted in such a way that a single characteristic, or part, may stand for the whole -- symbolization. And symbolization is capable of expression for purposes of communication.

Animals have forms of communication derived from similar nervous processes. No doubt they also have imaginal processes in which past experience, "memory", governs their abstractions, reactions, etc. But animals do not have the capacity to create and organize into systems forms of representation capable of existence independently of the organisms producing them. Each generation of animals must commence to accumulate experience at the point where the preceding generation started, (disregarding for the moment the slow process of "structuralizing experience" provided by organic evolution), whereas human organisms can transmit their experience by symbolism and, theoretically at least, commence where the preceding generations left off. This human capacity to abstract experience and produce extra-neural symbolism which may be accumulated and transmitted with the race, has been called time-binding by Korzybski. It is the central observation upon which General Semantics depends.

Time-binding would not be possible without the uniquely human development of the cortex of the nervous system. It sharply differentiates human from lower forms of

life. The presence of the human cortex can, and should, modify the functioning of all lower centers of the nervous system. But it is not mature until adult life and in the first years of development human nervous systems resemble those of animals in their reactions. This not only means that immature humans have limited capacities to abstract but that conditional reactions may be developed in childhood which will need reconditioning for the changed conditions of adult life. The persistence of reactions appropriate to infancy, in adult life, is the source of so-called adult infantilism. Education should prevent this situation; psychiatry has to 'cure' the condition when it gives rise to maladjustments.

Symbol-systems ranging from modes of gesturing to various kinds of language, and including dance, the plastic arts, architecture, music, poetry, prose, and mathematics, form a complexly interlocked cultural matrix of doctrines, beliefs, "philosophies", creeds, and other forms of evaluation and orientation. By such forms of representation the past is utilizable in the present for the future. Culture is cumulative and old evaluations may direct recent abstractions to influence future adaptations. This is the mechanism of so-called culture-lag among the protean manifestations of which at the present time are the utilization of scientific discoveries for war-making, the mutilation of new structural discoveries in psycho-logics, physics, etc., by 'interpreting' them in the light of old assumptions, the paradoxical coexistence of rigorous scientific method in a profession with animistic and other primitive orientations in religion, politics, and so forth. When new abstractions, largely the product of scientific methods, do force the abandonment of earlier evaluations, assumptions, etc., with the consequent creation of new doctrines, new assumptions whose structure is unlike the old, the incompatibilities may lead to the formation of antithetical systems which, in turn, may produce divided personalities and divided societies. "Unified doctrines unify people," as Korzybski, and others, have pointed out. This is why, for optimum functioning of human nervous systems and the social organization of human beings, the conditioning factors governing human reactions should be compatible, consistent with one another. And this is one of principal differences between simpler, ("primitive") and complex ("civilized") societies.

Education, narrowly and broadly conceived, involves conditioning individual human nervous systems to develop patterned reactions governed by the evaluations implicit in various symbols and symbol-systems. Since symbols are meaningless apart from nervous systems producing and evaluating

them, (which is to say that it is the relationship that matters), we should speak of the neuro-symbolic environment. Of this, the neuro-linguistic environment forms, in our western civilization, the greatest and most important part. Human nervous systems are as much conditioned to standardized "thought patterns", often called "logic", as they are to standardized evaluations of traffic lights or clothing. Thus, even our so-called "creative" thought is often formalized and limited in its range and utility because it is cast in the mould of traditional, often primitive, "logics". These "logics" are actually methodologies of evaluation and while it should undoubtedly be the aim of education to train students in methods of "thinking", evaluating, etc., rather than "cramming them with facts", obsolete "logics" may be as disastrous as Procrustes' bed. We witness the operation of archaic, primitive, pre-scientific (1939) systems of evaluation in our adult infants, our increasing numbers of schizophrenics, our fanatical politico-economic theories, our regressive religions. Analyze these cases by the methods of Pavlov, Freud, and Korzybski, different as they are, and we find automatisms of nervous reaction which were developed in the first few years of life and beyond which the subjects have never progressed or to which they have regressed under the influence of such factors as enviro-genetic defects, frustrations, faulty education (conditioning), and the like.

Just as new geometries have replaced Euclidean; quantum mechanics, astro-physical, etc., theories have replaced Newtonian physics, so must a new, contemporarily adequate "logic" replace older ones which have outlived their usefulness as methods of evaluation in "thinking" or speaking about empirical data. Non-Euclidean, non-Newtonian and non-Aristotelian systems have appeared. While they replace the old they do so by inclusion rather than exclusion, by defining the limitations of the old and providing a symbolic framework consistent with new structural discoveries. And they are consistent with each other; incompatibilities productive of culture-lag do not exist. It is these new systems of evaluation which should govern the conditional reactions of nervous systems functioning in western civilization. This would eliminate culture-lag and its correlates in the field of psycho-pathology.

General Semantics shows that the neuro-linguistic environment automatically conditions archaic, primitive, and other inappropriate reactions in immature nervous systems through the structure of ordinary language, in the following ways:

1) Any form of representation functions as a guide to action in direct relation to its similarity of structure to the empirical structure. A map, for maximum usefulness,

must be similar in structure to the territory it represents, e.g. --

	1	2	3
Territorial facts:	San Francisco	Chicago	New York City
	A	B	C
Map symbol-system:	San Francisco	Chicago	New York City

Structure is a function of Relations; relations a function of Order. Similar relations and order have to be represented; then the map may be said to be similar in structure to the territorial facts. A complex map, like a weather map for flying, would have to represent multi-dimensional structure, i.e., processes. These principles hold true for any kind of representation or symbolism. As symbolic representations become more highly abstracted they become more static and hence progressively unlike the dynamic processes of "reality". Various devices, as in mathematics, have to be used to represent multi-dimensional structure, changing relations, etc. This is why new mathematical forms of representation have been developed and why the physical sciences have accelerated beyond the bio-social ones, why our adaptions to the "physical" world are more successful than our "social" adjustments. Ordinary language is structuralized according to the rules of Aristotelian "logic" -- a subject-predicate system based on the two-valued, either-or, structure represented by the formula: A is B or not B. Mathematical languages may be unlimited in values, similar to the indefinite number of actual relations, orders, etc., observable in "nature".

2) This map-territory relationship of language to the facts it represents has many implications. A map is not the territory; a verbal representation is an abstraction, an evaluation filtered through a personality or a social-system, and is not the actual facts, object, situation, etc., to be dealt with. This is a denial of identification of symbols with objects, feelings, people, "concepts", and so forth, which has led to so much psycho-pathology. Furthermore, because terms and statements may be similar they imply identity when none exists in "nature". "I love", "You love". Some term with implication of identity of reactions which, in actual fact will, be no more identical than the personalities involved. Similarities, yes; but no identity. Or, by following verbal structure, we identify characteristics or "qualities" of an object with the events themselves. "The traffic light is red." Is it? My nervous system abstracts "redness" and projects it on some events "out there" while someone else, colorblind, projects "greyness". Identification, in protean forms, underlies most psycho-pathology; our neuro-linguistic environment not only assums it in linguistic structure but conditions us into reactions based on this false-to-fact assumption.

3) Any form of representation is an abstraction of some order. In the case of language, high orders of abstraction are involved and may be confused (identification) with each other as when we use inferential terms along with descriptive terms in a statement, or equate classificatory terms of high order with classificatory terms of lower order. "The rose is a flower" should "read", "The rose, class of a lower order, may be classified in a higher order as a flower." At each successive level of abstraction some characteristics are left out. Thus no abstraction can represent all characteristics. No map represents all the territory. Language, like maps, leaves out many characteristics and these characteristics left out may or may not be important. But the structure of ordinary language, unless modified by syntactical devices like punctuation marks, etceteras, or forewarning statements and other circuitous methods, implies dogmatism, absolutism, completeness, finality, etc. Compare the language of theology with that of descriptive science! Neurotic utterances are characterized, in the main, by rigidity, absolutism, etc., and neurotics behave in this manner. If our neuro-linguistic environment trains us, insidiously, in the assumption of allness we are bound to receive some rude shocks when we are forced, sooner or later, to deal with characteristics not abstracted, not predicted by the linguistic representations.

4) Language is replete with terms such as "space", "time", "body", "mind", "emotion", "thought" and so forth which divide verbally what is empirically indivisible. Such terms Korzybski labels elementalistic. Obviously, since they imply false-to-fact structural assumptions, they should be replaced by non-elementalistic terms like space-time, body-mind, etc. The expression semantic (evaluational) reaction should replace the elamentalistic expressions "emotional" or "intellectual" reactions. "Psychology", which is elementalistic in implication, should be replaced by the term psycho-logics, a science of structure, relations, order, etc., of a certain range of neuro-psychic events. Neurotics and psychotics are constantly governed by elementalistic assumptions for which their neuro-linguistic environment is to a great extent responsible.

5) Levels of abstraction determine the meanings of many words of the type: "love", "fact", "doubt", "class", etc. If a statement using such a term can be made about another statement using the same term, their contexts, and so their evaluations, are different. Korzybski labels this type of term multiordinal and shows that multiordinality characterizes much of the most important terminology we have. It is a two-edged implement capable of creating and solving human problems. In psycho-pathological conditions we find multiordinal mechanisms of the type, " - fear of fear - ", based on identifications of

words with facts, inferences with descriptions, etc. Witness propaganda technique, political oratory, the old "philosophies" and so forth. "Love of love", is not the same reaction as "love", whatever value is given to the ambiguous term!

These are some of the outstanding features of our neuro-linguistic environment. They apparently underlie a great deal of human maladjustments, confusions, psychopathology, etc., because language symbolism controls such a vast area of human behavior through conditioning mechanisms. Language represents evaluation, of low or high orders. It produces semantic (evaluational) reactions of low or high orders. It can over-stimulate "infantile" levels of nervous reaction (sub-cortical, so-called "thalamic" reactions) or arouse mature, deliberated, reactions in which "cortical" evaluational mechanisms work in harmony with lower, executive, centers. Language can induce identification as a psychopathological process through confusion, of orders of abstraction and can "touch off" conditional reflexes of dangerous type. Language determines, by the mechanisms outlined above among others, the structure of "internal speech" -- often called "thinking" -- so that we may be said to "talk ourselves" into mis-evaluations of "reality" through reacting to the false-to-fact or limited assumptions contained in the structure of language.

The terms <u>intension</u> and <u>extension</u>, from classical "logic", may be applied to the two trends of human orientations -- to follow definitional, verbal, accounts or maps of life or to be guided by the "facts" themselves. By <u>intension</u> we go by <u>definition</u>; by <u>extension</u> we follow current "realities", (scientific knowledge 1939, etc.). It is clear that our neuro-linguistic environment, (and for that matter the whole field of symbolism), gives us intensional orientations if we follow it too closely, too "literally". Neurotics and psychotics are the best examples of intensional orientation; but theorists of all fields, "philosophers", many "psychologists", theologians of the old stamp, many educators, etc., not only cling to their verbiage as if " - the word was God", but they proselytize and coerce defenseless children and students to the worship of words, to intensionalism. Nor are scientists, even those in the highly extensional 'physical' fields, free of this neurotizing tendency which often appears as a compulsive adherence to verbal formulas, doctrines, obsolescent hypotheses and might be termed "verbal obsessionism". So-called "logic-tight compartments" in all of us are principally intensional.

The structure of the old language induced intensional orientations. It was the product of primitive, pre-scientific, abstractions made by nervous systems dependent upon their crude "senses". Thus it assumed that the "sensations", qualities,

of an object were identical with objects or with each other; that "matter" was solid, "space" empty; one "cause", one "effect", etc. Extra-neural instruments of investigation revealed microscopic and sub-microscopic happenings unaccountable in the old systems of evaluation, contradictory to mere "sensory perception". What appeared static became dynamic; "matter" turned out to be a process of changing relations, the invariences of which, (relations of relations), as a kind of statistical average gave rise to the illusions of hardness, softness, permanence, etc.; "space" became a plenum, or fullness, of electro-magnetic events ordered in "time" of which "matter" was a special "curvature" of space-time; many "causes", many "effects" replaced the old two-valued 'logic' of 'cause' and 'effect' with an indefinite-valued structure of "multi-dimensional chains of events". And so on.

New languages appeared, the structures of which were extensional; or at least less intensional. Orientation by a more extensional language in safer; and it is essential for human survival in a world created by modern science. Under primitive conditions of life the old language is sufficient for most practical purposes but in the complexities of the "machine age" it is not only misleading but maladaptive. We cannot orient ourselves by science 1939 in one field of life and by primitive animism or the 'pure logic' of Aquinas in others. This is culturelag at its worst. It begets schizophrenic people and schizophrenic societies. Disorientation ceases to be sporadic, confined to "mental" cases; it becomes endemic. And endemic disorders must be dealt with by general measures of the type used in infectious diseases.

Progress in preventive medicine is a result of the scientific knowledge of the mechanisms of disease processes. Thus asepsia replaced antisepsis, immunization, the costliness of hospitalization, etc. Neuro-semantic disorders, ranging from mild to severe maladjustments, from behavior problems to dementia praecox, may also be eliminated when we become conscious of their mechanisms. Great headway has been made by scientific neuro-psychiatry, but so far some of the most important, basic, mechanisms were missed, or only dimly, intuitively, understood and formulated. Nor has neuro-psychiatry, able as it is in individual treatment like the old medicine and surgery, developed a generalized therapy and preventive technique. Neuro-psychiatry and education have only recently begun to realize the very great importance of symbolism in human affairs. General Semantics, as a general theory of human evaluation based on scientific 1939 knowledge from the fields of the physical and bio-social sciences, including neuro-psychiatry, comparative social anthropology, epistemology, and semantics, (see the work of Richards, Bertrand Russell, and others), not only generalizes the problems

into one unified theory but has developed practical, working techniques of prevention and treatment. It stresses prevention, rather than therapy, through modification of and immunization to, the neuro-linguistic and neuro-semantic, environment. Unequivocally, preventive neuro-psychiatry is the responsibility of educators.

Practical application of General Semantics involve the training of children or adults in, 1), consciousness of mechanisms of evaluation, and 2), techniques designed to "immunize" the nervous system against "shocks" produced by conditional reactions to the old neuro-semantic and neuro-linguistic environments, and 3), changing the structure of language in order to make it more extensional.

These methods are much more simple than would, at first, be assumed. Mechanisms, well-known to neuro-psychiatry, psycho-logics, etc., are demonstrated by visuo-kinaesthetic techniques rather than by linguistic means alone. Elementary experiments, suitable even to pre-school children, demonstrate non-identity, non-allness, (characteristics left out), abstracting, projecting and other interrelated mechanisms of evaluation. Constant attention is paid to map-territory relationships to emphasize the difference between, and relative uses of, intensional and extensional orientations; a mixture, in language, being necessary for optimum survival in western civilization. (Generalization would be impossible without intensional terminology in scientific or artistic languages but we must not be misled, by it.) Training in extensional orientation by well-known educational techniques of repetition, "drill", copious tangible examples, etc., has the effect of diminishing and even stopping psycho-pathological anxiety, worry, identification, and other disturbances. "Shocks", ordinarily produced by "bumping into unexpected realities", become less frequent because, when nervous systems are trained to evaluate correctly, predictability increases. It is the unexpected that shocks, the old orientations have led us to develop excessive expectations and it is those false-to-fact expectations that are responsible for "facts" hurting us. Repeated "shocks" produce breakdown, disorientation, panic-reactions, etc.

Connected with the above methods for changing our own, individual and collective, neuro-semantic reactions, either by changing already conditioned adults or by conditioning children in new, extensional, orientations, methods have been devised for changing the structure of ordinary language without changing the language in any radical way. The object is, of course, to alter the structure of our neuro-linguistic conditioning factors so that they no longer

arouse improper evaluational (neuro-semantic) reactions. Certain devices, adapted from mathematics, are utilized. These have the effect of introducing extensional factors of evaluation into our "thinking", speaking, etc. Verbal statements, ordinarily static in implication, can be given a form which denotes the dynamic process character of the facts they are used to represent. Thus any statement is true only at the date it is made: "facts", of any order, are changing; only the statement is "fixed". And any statement is not the only statement that could be made about a series of happenings: this must be indicated. No statement says all there is to be said about happenings: many characteristics are not abstracted, not reported. Many terms are either elementalistic or are derived from obsolete doctrines and imply false-to-fact structural pictures of "reality"; or they are multi-ordinal, vague without a clearly defined context, etc.: these terms should be safeguarded against conveying false information, evaluations, etc., when they cannot be replaced by new, structurally correct, terminology.

By dating statements we elimate dogmatic, absolutistic, "true for all time", etc., assumptions. By indexing statements we differentiate apparently similar evaluations, limit them, distinguish between orders of abstraction, etc. The expressions etcetera, "among other things", "and so forth", remind ourselves and our listeners, readers, etc., that only a few 'facts' have been covered by the statement, characteristics possibly yet to be discovered, have been left out. Hyphens unite many elementalistic terms and produce the implication at least of non-elementalistic structure. The free use of quotation marks forwarns the writer and the reader that "nonsense" is being said if the terms are taken literally, that at most they are used, in the absence of better ones, to convey the "feel" of a situation.

There are other techniques applicable to linguistic structure but these are the principal and obligatory ones. Their constant use, sub-vocally, applied to one's own and other people's utterances, trains us in consciousness of abstracting and eliminates allness, identification, elementalism, etc., from our evaluational reactions. As they are slowly introduced into linguistic usage--the neurolinguistic environment -- we shall eliminate many nervous irritants which have led to personal and social maladjustments, disordered familial, national and international relationships, etc. Again, this is a problem for educators rather than neuropsychiatrists.

These techniques of General Semantics have already accomplished astonishing results in education and therapy. There is every reason to believe that their chief merit lies

in prevention. But prevention cannot be proved. They supplement other psycho-therapeutic procedures and radically shorten the duration of therapy. Therapeutic results appear, at the present date, to be more lasting. Patients seem to acquire a much deeper, "permanent", flexibility of adaptation which carries them through situations which, under other re-educative techniques, would have precipitated relapses. They do not become so dependent on the therapist. They are given tangible, thalamic mechanisms to work with, which, even if incorrect in detail, are better instruments for reorientation that vague, "metaphysical", demonological, verbal speculations which characterize much "school" psychotherapy. Since therapy turns out to be reorientation, re-evaluation, based upon correct-to-fact evaluation it is re-education; patients may be regarded as students and the doctor is no longer forced, under the pressure of his own or the patient's expectations, to play a role of onmipotence and omniscience. He does not know all; he teaches a method of evaluation which, under present conditions of life 1939, represents the best available generalizations and techniques of adaptation: to wit, science 1939.

Since teachers in our school systems have the responsibility of mediating past collective experience to children for present and future problems of adaptation, they themselves should be extensionalized by the techniques of General Semantics, neuro-psychiatry, etc. Teacher training is the most important area for the general application of preventive techniques for "mental" health. The selection of healthy, fairly well-balanced, biologically-sound individuals is presupposed. Let us "face facts" that there are grades of human protoplasm and because we still lack precise techniques of discrimination of a laboratory type we must rely upon widely experienced, almost 'intuitive', judges to tell us what is adequate and what is inadequate life material. After selection of the best material training should be rigorous. No longer can the teaching profession be a haven for unhealthy, twisted or neurotic, "escapists". Our racial future depends upon professional educators; i.e., if we are not to succumb as a race to the influence of degenerate leaders who skillfully condition their subjects to behave at primitive, animalistic, levels. Professional educators, aware of mechanisms, guided by a theory of sanity (rather than anxiety about insanity), will train children how to abstract those characteristics of their culture which have the greatest value in terms of human survival, happiness, etc., how to discover through improved methodologies, new structural data with which to construct more suitable human environments in the future. Culture-lag will diminish and eventually should disappear. But not all: "utopias" are verbal fictions!

It has proved impractical in an article of this type to give credit to all the sources of information, authorities, etc., upon which my remarks have been predicated. My greatest debt is to Count Alfred Korzybski whose principal works have been foot-noted. But to his and my colleagues in neuro-psychiatry and General Semantics I am greatly indebted for stimulating discussion, data, phraseology, etc. In particular, however, to the influences of Dr. C. B. Congdon, Dr. Karen Horney, Prof. Lloyd Warner, Mr. George Devereux, and Mr. Cornelius Crane.

CAUSATIVE FACTORS IN DEVELOPMENTAL DEFECTS IN CHILDREN

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The present system of periodic school examination of children reveals most of the physical disturbances present. It does not, however, completely go into the problems of prevention. It is well known by any public health worker that it is difficult to interest the average parent in this matter. The possibilities, however, are limitless. If one considers, for example, that 60% of all bone disturbances in children could be prevented by more intelligent care of mothers during pregnancy, he gets an insight into what preventive efforts might accomplish. The same intelligent efforts would considerably reduce the incidence of a number of other problems confronting parents and teachers. Amongst these are excessive fatigue, irritability, lack of attention, unwillingness to enter into sports, visual disturbances, poor immunity to colds, certain allergic disturbances, inability to control certain eliminative functions, and more important than all of these, inability to develop and maintain an adequate bone and muscle structure to resist the amount of trauma to which it is put.

The problems to which I particularly wish to call your attention are those involving defective development in children. The majority of people, including parents, teachers, and physicians, consider that if a child is average in stature and weight and mentally able to keep up with his age group he is normal and is to be classed as a malingerer or as an abnormal behavior problem if he does not conform to the average expectancy. If people who deal with children would only realize this basic truth that children will consistently go out of their way to be average or better and want to get along and be liked, we would have fewer of these problems. Excepting the rare mental abberation, one can almost consistently say that the child who fails to conform to the average has either a physical defect or has parents or associates who make it impossible for him to use his otherwise normal or average abilities.

For the past ten years I have been associated with a clinic where we attempt not only to correct a child's bone, joint, and muscle disturbances, but also make every effort to determine why the child developed any one of these disturbances. It is not enough to accept such a problem and treat it expectantly. There must be some cause for these structures to break down. While diet and parental care can be factors it is very easy to overlook much more important causes. Commonly there is some basic physiological defect which makes it impossible for the child to take the best of food materials and convert them into the necessary chemical substances required to build good bone and muscle structure.

Outwardly these children may appear healthy and well. Their height and weight may conform to average for their age, and a superficial examination may not reveal any significant findings. A more thorough investigation is necessary to bring out these developmental deficiences. For example, we may frequently see an individual whose chronological age is from 12 to 16 but has the development and maturity of tissue normally expected from 6 to 8 years of age. Such a retardation in physical development cannot fail to influence the individual's behavior and ability to adapt himself in his age group. He is very likely to be much more susceptible to fatigue, bone, joint and muscle aching, and postural disturbances. Fatigue alone is a tremendous handicap; it will definitely slow down all sensory mechanisms having to do with incoming stimuli and related with memory. The old saying that information comes in one ear and goes out the other can certainly apply in the matter of excessive fatigue. On the other hand, as regards the ordinary sensory mechanisms, these individuals are likely to become hyper-irritable.

Since the discovery of insulin and its clinical use in diabetes mellitus, a new clinical entity has been brought out which is very much the opposite. A loose term to describe this is, "Periodic hypo-glycemia." In this disturbance we have an individual unable to maintain a normal level of available blood sugar from one meal to the next, with periods of time when the blood sugar drops to points considerably below that necessary to maintain normal metabolism. Two vitally important effects accompany such a drop in available blood sugar: One is the lack of sufficient energy fuel, with consequent fatigue. A second and more important, is the chain of events which may follow this drop. The most common compensatory mechanism nature uses in the presence of this situation is to pour out adrenalin in order quickly to convert stored glycogen into glucose and get it into circulation. The presence of increased amounts of adrenalin can and does result in increasing the sensitivity of sensory reflexes to the point of hyper-irritability. Commonly this physiological disturbance is responsible for our late morning and afternoon fatigue, nervousness, etc. It is the most common cause for inability to fall to sleep, restless sleep, and nightmares in children. Such a situation has a great deal to do with children who waken in the morning apparently more tired and irritable than they were on retiring. It is this condition on which such commercial preparations as Ovaltine and Coco-Malt have capitalized. In my experience it is responsible for more behavior problems in growing children than any other one physical disturbance.

Correction of this situation is almost always possible and resolves itself into determining which of several physiological imbalances have been responsible for setting up this mechanism, and by doing carbohydrate tolerance tests to determine approximately when this fall in blood sugar occurs with relation to meal time, in order to allow prevention by providing some readily available source of protein and sugar at the proper time.

As regards the causative factors the following are most commonly found:

1. Thyroid deficiency.

2. Insufficient regular protein intake.

3. An excess of carbohydrate with resultant excessive stimulation to insulin production.

4. Pituitary disturbances, most of which are some deficiency in the function of the anterior lobe cells.

It would be impossible to give a classical description of the child who suffers from periodic hypo-glycemia. Such a child can be thin or fat, slow and sluggish, or hyper-active. He may conform to average expectancy for height and weight as related to age. Suffice it to say, however, that in the average group of abnormal behavior problems amongst growing children, probably fifty percent or more have this underlying disturbance as wither a causative or contributing factor. The old idea of not feeding a child between meals does not apply in these children. Not only will their general health and sense of well-being improve, but they are very likely to have better appetites at meal time. Certainly their perceptive and retentive abilities will be greater and at a more constant level. A simple and very satisfactory means of controlling these periods of low blood sugar is the ingestion of six to ten grams of powdered protein and an equivalent amount of sugar from two to two and one-half hours after each meal. An excellent source commonly available is Ammino-Acetic, Acid Elixir or Glyco-elixir.

One of the most common complaints of children entering our clinic is some problem related to posture. Here again we feel that ordinary physiotherapy training, exercise, etc., have a limited place and are commonly useless unless one attempts to determine why a child does not walk, sit, or stand with reasonably average posture. Given a child who has a good skeletal and muscle structure, who produces the average amount of energy for his age, and who has a normal sense of well-being, posture problems would be practically impossible. With this in mind, during the past eight years we have carefully checked each patient coming in to our clinic with posture problems, in the following manner:

Careful basal metabolisms were done in each individual. Roentgen studies of other areas, to reveal the degree of osseous development, were made in each individual, routinely. Complete blood counts, urine analysis, Kahn precipitation, and blood cholesterol were checked. In most instances, sugar tolerance and serum calcium and phosphorous studies were carried out. The purpose of this study was to determine the incidence of metabolic disturbances present in this group of children. Posture training and exercise certainly are an

important part in the correction of defective posture. An adequate dietary regime, insofar as proteins, mineral salts, and vitamins are concerned, is essential to the development of a good skeletal and muscular structure. However, it has been our experience that these alone do not always suffice. The lack of that intangible and yet highly important sense which we might call "feeling of well-being" will defeat all the physiotherapy and ideal dietary regimes one might prescribe.

The statistical data are to be presented in a more complete analytical form, at a later date. For the purpose of this discussion, the following is of significance:

There was an incidence of goitre on the maternal side of the families from which these patients came, of 38.2%. Such clinical entities as enuresis, retarded dentition, backwardness in school, orthodontial defects, abnormal behavior tendencies, and chronic muscle-aching, or so called "growing pains" occurred in from 23% to 47% of the cases studied. Basal metabolisms were normal in 87.5% of the 34 cases studied. Blood cholesterol levels of 200 mgms.% or higher in 64%. A retardation in ossification of growth centers of two years or more was present in 73.5%.

When dependent on clinical observations, no statistical analysis is fool-proof. However, in spite of the many variables, the high incidence of poor skeletal development, low basal metabolic rates, and increase in blood cholesterol could not occur accidentally.

We do not feel that maternal goitre or maternal thyroid deficiency is responsible for all postural disturbances. Nor do we feel that a retarded skeletal development is responsible for all such defects. It is our sincere belief, however, that metabolic disturbances which may dictate to the individual a poor skeletal development, or poor muscle structure and muscle tone, will be an important factor in a considerable percentage of such cases; and it is our sincere hope that others dealing with these problems will go more carefully into the bio-chemical processes.

Another common disease process found in children during the growing years is that which is most commonly known as Osteochondritis. This process involves the growing nuclei of the bones, the epiphysis. It is by far the most common bone disease we see today, and it accounts for from 50 to 60 percent of all our bone diseases. Previous to 1935 this process had been variously described as the result of Syphilis, Tuberculosis, focal infection, trauma, circulatory disturbances, dietary deficiencies, and what not. At various time in the past four years we have published a series of studies of children whom we have carefully investigated for other disturbances. In a total of 40-odd cases we found 87.5% with a definite metabolic disturbance, resulting in a poorly developed skeletal structure which will not stand the ordinary weight-bearing trauma to which it

is subjected. The disease may go undetected and the child merely have legaches, backaches, tender joints, or periodic limping. Where a diagnosis has been made, treatment has consisted largely of removal of weight-bearing by bed rest, cast, or mechanical appliances. The ordinary course of the disease has been from two to six years. In most instances no particular after-effects are noted; however, there is a sufficient number of individuals with limitation in motion, spine curvature, heel spurs, and other handicaps for the balance of their lives to make this a valuable study.

The remainder of my discussion will demonstrate some clinical cases with X-ray studies, chiefly portraying the results obtainable in this particular type of bone disease.

REMEDIAL READING PROCEDURES IN LOS ANGELES

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In prefacing this talk I must state that my opinions and experiences are gathered from my work in the Section for the Education of Exceptional Children. Inevitably they are not the opinions of the entire Los Angeles school system. In his heyday as a psychologist Hugo Munsterberg wrote a book about the people of his adopted land, and a clever critic in his review of the book called it "America and the Americans as seen through the eyes of a German with a Harvard astigmatism." My astigmatism is that of a specialist working with children who have failed to acquire normal reading skills under normal teaching conditions. At least the teaching conditions are normal for this one city.

It is somewhat generally expected of a large school sytem that education in all its aspects and ramifications is superior to education in most types of smaller communities. As a worker in one of the large school systems I should be able to say that we live up to what is expected of us. Though reluctant to do so, I must honestly admit it is not true. The very complexity of the administration of a large school system uncovers the individual child and his individual needs too far from continued systematic attention. It is a long trail that leads from superintendent, deputy superintendents, assistant superintendents, guidance sections, health sections, supervisors, principals, teachers, to the child with a need for specialized help. The trail is lengthened when the child is one of approximately two hundred thousand taught by one of eleven thousand teachers in one of 293 schools.

The one problem of selecting the right teacher for the right child is difficult at the best, and it is increasingly difficult with the increase in numbers of teachers and children. The present leveling off of the school population and the need to observe the teacher tenure laws further complicate the problem. So too does the growing tendency to shift frequently by promotion or otherwise, principals from schools where they know the children and teachers to others where the pupil and teacher are personal strangers.

Despite the complications which are present in large school systems, in our city reading is improving. The children are increasingly better readers of better books. This is true because of the changing concept of the educational needs of young children and of the methods of meeting those needs. However, perfection neither of understanding nor of instructional methods has been reached. We still have children who are deficient in reading skills and the deficiency may have its cause in either the presence of physical deficiencies or the absence of individual appropriate techniques of instruction, or in both.

Whatever the cause or causes of the failure to learn to read adequately remedial measures should be applied. In the Section for

the Education of Exceptional Children there is no quibbling about the difference in meaning of developmental reading and remedial reading. We know that the number of children needing individual diagnosis and instruction is so great that many more adjustment classes are needed to meet the situation.

At present Los Angeles operates two types of Adjustment Classes. In one type is enrolled approximately twenty-five educationally maladjusted children with an age range of not more than forty months. The population consists of pupils who are failing to adjust in the regular classes in the manner that their intelligence warrants us to expect. The enrollment is composed chiefly of normal and of dull normal children, although occasionally a pupil of superior mental ability is for a time cared for successfully in one of these classes. The apparent maladustment of candidates for adjustment is educational but this is frequently a symptom of abnormal physical, mental, emotional, or social conditions. Nine-tenths of the pupils are reading cases requiring special techniques of instruction in reading. Each pupil is retained in the special class until it appears that he can take his place in regular class reasonably well suited to him.

The second type of class concentrates upon instruction in remedial reading. Small groups of not more than six pupils who are deficient in reading skills are given intensive instruction based upon diagnosis of individual cases. This type of class in very valuable in progressive schools carrying on an integrated activity or experience program, since the pupil is away from his social group only a part of each day.

The diagnosis of pupil difficulties is made with the aid of the psychologist to establish the status of mental reading readiness with relation to the grade placement of the pupil; the physician to diagnose the physiological readiness to read. He attempts to tell us exactly the condition of the child's hearing and the condition of his vision. We try to find out, not only whether, in reading situations, there are refractive errors of sight, hyperopia, myopia and astigmatism; also if there is visual superimposition, sufficent acuity of vision, eye muscle imbalance, or steriopsis. Until we know these facts we cannot be sure that tutoring is not aggravting the problem. Without an accurate diagnosis of each individual case of deficient reading the application of even the best remedial reading techniques is mere trial and error -- probably some more of the teaching that helped to create a non-reader.

Part of the testing of hearing and of vision is done by the trained teacher if she has at hand the necessary mechanical equipment. However, teaching time would be saved if the complete diagnosis of the case were furnished to the teacher at the time she enrolls the pupil. The psychologist might be provided with the equipment and technique for diagnosing non-refractive errors of vision, at the time the mental status is determined. The services of a physician would then be needed in only a limited number of cases.

It is probable that, in Los Angeles as in other places, almost 90 percent of the severe reading cases should have medical attention before receiving pedagogical help; that any pressure on most pupils so handicapped can only further mal-adjustment and disintegration.

Having ascertained, to the best of our ability, the causes for the failure of a pupil to acquire appropriate reading skills the teacher undertakes the task of developing those skills. She is not confined to any one method or technique of instruction. In our conferences the teachers and I, their supervisor, study the findings of all the investigations of which we hear. We have learned much from the master teachers in our own group, Marion Monroe, Dr. Betts, Dr. Gates, and others.

From the experiences of our own group we know that we must not enter the field of battle with the expectation of victory until the young soldier is prepared for the fight. We must not ask him to read what he cannot see, nor expect him to recognize and produce sounds that he does not hear. We have learned that he must have something interesting to him to read about, lest reading drill or practice block learning rather than promote it. We know that it is necessary to give definite guidance in reading from left to right, of studying unfamiliar words systematically from left to right. It seems to us that the best results are gained with non-readers using the individual child's own stories as material to read and progressing from those to subject matter in which he has an interest through actual experience.

From Dr. Monroe we have learned drill techniques applicable to particular types of cases.

From Dr. Gates' last book on the improvement of reading we have a sheet of principles and each teacher has the sheet in her desk to serve as a guide to better teaching.

That sheet says:

<u>Dr. Gates thinks improvement of reading depends upon the following:</u>

1. The material should be highly interesting to the pupil.
2. The material should be of proper difficulty.
3. The materials should be of various types.
4. An abundance of easy reading should be provided as a substitute for review.

1. Remedial instruction should not be substituted for enjoyable activities.
2. Remedial instruction should be managed so as not to classify the pupil in an embarrassing way.
3. The time allowance for remedial work should be generous.
4. The teacher should have sufficient time to arrange and supervise the remedial work.

5. Remedial work may be either individual or cooperative.
6. Remedial work should be begun at a favorable time.
7. Successes should be emphasized in remedial work.
8. Improvement should be measured and the record shown.
9. The competitive impulse should be enlisted.
10. The pupil's particular errors and successes should be detected.
11. The teacher's attitude should be optimistic and encouraging.
12. Practice should be so distributed as to avoid fatigue and boredom.
13. A variety of exercises and activities should be provided.
14. A plan should be dropped when it fails to produce results after a fair trial.
15. Individual supervision should be continued until the pupil has his improved techniques well habituated.

On the subject of appropriate and interesting reading material we feel strongly. It is of the uttermost importance. Only the extremely alert teacher, working with the pupil from day to day, can supply the right book at the exact moment when it will furtner progress most fully.

As an aid to the teachers a list of good readers is prepared each year. This year's list follows:

LOS ANGELES CITY SCHOOL DISTRICT
DIVISION OF INSTRUCTION AND CURRICULUM
Section of Education of Exceptional Children

May 15, 1939

TO: Teachers of Adjustment Classes

FROM: Cora Lee Danielson

SUBJECT: Books for Remedial Reading for the year 1939-1940.

Approved: Aurthur Gould, Deputy Superintendent
Jessie A. Tritt, Supervisor

* * * * *

On this list you will find some old books as well as some new fresh titles. The old Work-Play books are retained because we have in stock some work books to accompany them. However, the new series of Gates-Huber-Peardon for the primary grades is added. There are also some fine new science readers and some good health and safety books.

The newly adopted state readers may be used again this year for any child who has not been exposed to them in regular grade work.

The pleasure reading books are not listed, but that table should be well supplied and fresh at all times.

* * * * *

PRE-PRIMERS	AUTHOR	PUBLISHER
Rides and Slides	O'Donnell and Carey	Row-Peterson
Here and There	O'Donnell and Carey	Row-Peterson
Peter's Family	Hanna, Anderson, Gray	Scott-Foresman
Tom's Trip	Smith, Nila B.	Silver-Burdett
We See	Frasier and Dolman	Singer Company
Now We Go Again	Gates-Huber-Peardon	Macmillan
PRIMERS		
Day In and Day Out	O'Donnell and Carey	Row-Peterson
Everyday Life Stories	Gehres	Winston
Peter's Family	Hanna, Anderson, Gray	Scott-Foresman
Child Development Readers	Hahn	
Sunshine and Rain (Science)	Frasier and Dolman	Singer Company
Jim and Judy	Gates-Huber-Peardon	Macmillan

FIRST READER	AUTHOR	PUBLISHER
Spick and Span	Andress, Goldberger, Dolch	Ginn
In Storm and Sunshine	Buckley	American Book Co.
Down our Street	Gates-Huber-Peardon	Macmillan
Work-Play Book I	Gates-Huber	Macmillan
David's Friends at School	Hanna-Anderson, Gray	Scott-Foresman
Nick and Dick	Gates-Baker	Macmillan
Fun with Nick and Dick	Gates-Baker	Macmillan
Through the Year (Science)	Frasier, Dolman, & Van Noy	Singer Company
SECOND READER		
We Grow Up	Gates-Huber-Beardon	Macmillan
Work-Play Book II	Gates-Huber	Macmillan
Friendly Village	O'Donnell and Carey	Row-Peterson
Friends About Us	Storm	Lyon-Carnahan
Art Stories	Gray	Scott-Foresman
Science Stories	Gray	Scott-Foresman
City Friends	Dearborn	Macmillan
Webster Book II		
Fun With Nick and Dick	Gates, Baker, Peardon	Macmillan
Susan's Neighbors	Hanna, Anderson, Gray	Scott-Foresman
Down the River Road	O'Donnell	Row-Peterson
The World Around Us	Smith	Silver-Burdett
In Town and Country	Buckley	American Book
The Health Parade	Andress, Goldberger, Dolch	Ginn
THIRD READER		
Wide Wings	Gates-Huber-Peardon	Macmillan
Work Play Book III	Gates-Huber	Macmillan
If I Were Going	O'Donnell and Carey	Row-Peterson
Science Stories	Gray	Scott-Foresman
Art Stories	Gray	Scott-Foresman
Webster Book III		Webster
Child Development Readers	Hahn	
Pathway to Science II-	Craig	Ginn and Co.
Home	Waddell-Nemic-Bush	Macmillan
Growing Big and Strong	Andress, Goldberger, Dolch	Ginn
Here and There	Buckley	American Book
FOURTH READER		
Work and Play Book IV	Gates-Huber	Macmillan
Silent Reader (Latest Ed.)	Lewis and Rowland	Winston
Nature and Science	Patch and Howe	
Pathway to Science III	Craig	Ginn and Co.
Webster Book IV		
Helpers	Waddell-Nemic-Bush	
Safety Every Day	Andress, Goldberger, Dolch	Ginn
Around the Year	Buckley	American Book
The How and Why Club	Frasier, et al.	Singer.

FIFTH READER

Work-Play Book V	Gates-Huber	Macmillan
Silent Reader (latest Ed)	Lewis and Rowland	Winston
Webster Book V		Webster
Nature and Science V	Patch and Howe	Macmillan
Pathway to Science IV	Craig	Ginn
Nature Peoples	Rugg-Kruger	Ginn
Doing Your Best For Health	Andress, Goldberger, Dolch	Ginn
On Land and Water	Buckley	American Book
Wheels Westward	English-Alexander-Johnson	

SIXTH READER

Work-Play Book VI	Gates-Huber	Macmillan
Silent Reader (Latest Ed.)	Lewis and Rowland	Winston
Webster Book VI		Webster
Nature and Science VI	Patch and Howe	Macmillan
Pathways to Science V	Craig	Ginn
Pathways to Science VI	Craig	Ginn
Our America	Melbo	Bobbs-Merrill
Building Good Health	Andress, Goldberger, Dolch	Ginn
Who Travels There	Buckley	American Book

Hand Book in English For
Boys and Girls

Teachers Copy of Each of the
New Gates-Huber-Peardon
Readers.

In concluding this talk I shall review briefly the histories of some striking cases.

Case Number One is a boy we have worked with this year. He came to a reading class from a beginning third grade. He was ten years old. Our test records show three Binet tests given during the past four years. The I. Q. 's varied - 83, 89, and 95. The home situation was as nearly favorable as can be expected with an entirely cooperative father doing his best for three children with an habitually inebriate mother.

The boy had been in three schools in his four years in Los Angeles and had not learned to read.

The teacher said of the case "He could not read in the first reader- didn't know little words like an or see. He firmly believed that he was dumb and could never learn to read. This he declared many times each day whenever I attempted to work with him. He acted like a clown, rolling on the floor and ground, yelling and laughing boisterously at the slightest things that seemed to amuse him.

Principal and teachers thought he was a hopeless case and contemplated returning him to his own school. We truly believed there was some discrepancy in the Binet tests and that he belonged in a development school.

It seemed useless to work with the boy individually, so we put him with a group of beginners and began giving them drills on phrases, words, and some sounds. He mimiked and cut up antics in class. We ignored him and most of his antics, but kept on working. The particular work was especially given for this boy (unbeknown to him). We presented work from a certain lesson and book which we planned on using later. After several weeks of work he would come to class and say, ' I know that, I can say that.' I had him give any meager part he knew and always praised him highly each time. He liked it and began trying to remember the phrases and words. One day he did better than anyone in the class. I made a very big thing of the fact that he was the best one in the class. When I was sure he knew all the phrases and words in a lesson I had been working on for weeks, I called him alone one day and said, 'I wish you to see this.' He said, 'I can't read it, I'm dumb.' I said, 'You can look at it anyway and see what you think the pictures say.' He came to the reading table and looked at the picture and read the first line or two and looked up amazed and said, 'Why I read it, I'm readin' it!!!' He said to the class, 'I read it!!'

He burst into laughter and laid his little head down on

the table and laughed and laughed. When he became quiet I had him read the whole page and another. He wondered for days and still says, 'I don't see how I do it. How do I do it?' whenever he does work which he believed he couldn't do.

After this emotional block was broken, I taught him with the same methods we use with other children. Kinaesthetic word tracing has made a good speller of him. He has a good eye movement, a good sound sense, a sense of humor, and knows what he reads. He is reading from, "If I were going." He usually helps himself by sounding out the word, sometimes he spells it to himself. He has had eight months work in the remedial reading class. He knows all his combinations and adds and subtracts.

He is the office monitor and goes about the building like a little gentleman. He is dependable and truthful, very warm hearted, but still emotionally unbalanced . When he is excited or very tired he slips back into his old habits of clowning, but these occasions are becoming fewer and fewer.

We are all proud of him and his progress. He is proud of himself and wants to keep on learning.

The second case is a particularly obstinate one that was handled by a master teacher who is well known to Claremont Colleges, from which she took her Master's degree. It is the case of a girl in her thirteenth year. She had been a favorite demonstration subject for various clinics. In one, at least, of the clinics she had been diagnosed as a mirror writer, although our psychologist discovered that she did not reverse her letters both horizontally and vertically.

In her checkered school career this girl had not acquired the reading skills of a good second grade pupil. She scored on her first test in reading B2 Gray Oral, - 1.7, 1.6, 1.6 on the Gates Primary Battery.

The teacher summarized her liabilities and assets as follows:

Liabilities:

Measles between six and seven years. Very hard attack.
Had tonsils removed but they have grown again and are discharging pus.
Has sinus trouble.
Is deaf at times and ears discharge at times.
Has a super-sensitivity to light.
Reverses letters in words; reverses numbers.
Poor visual memory, due to lack of sustained attention.
Has no number skills.
Reads word by word.
Regresses.

Danielson 7

Assets:

Was fitted to glasses about a year ago - very good correction for hyperopic astigmatism; cuts down light somewhat.
Is conscious of reversals.
Has good motor coordination.
Writes well.
Has well established phonic sense, especially to initial sounds.
Pleasing personality.
Wants to learn.
Hard worker.
Able to organize ideas from material given to class for stories.
Follows directions well.

Treatment:

We ignored all facts about her history which had seemed important before, thus increasing her "typical" consciousness, rather than her atypical.

We made success possible from the first by making work very easy but mature enough to appeal to her maturity.

We gave her ample opportunity to excel in such things as helping in the room; housekeeper, caring for pets, safety committeeman, etc.

She is doing a type of study work which no one else is doing, so no chance of unfavorable comparison.

Methods:

A modification of the Fernald-Keller method of tracing used. Each word written in large script, which she did not recognize. She traced the word and wrote it for approval. These words were given for both reading recognition and expression material. The written words are filed in a box dictionary and used for reference and spelling. Each word that she does recognize in reading is learned this way and also typed in the phrase in which it is found, for individual flash card work. A work sheet is made for each lesson utilizing her errors for correction. In this way the selection is studied three times without just a repetition of the reading.

or

She writes a story each day for the newspaper,/her story book, which is typed by the teacher and read by the pupil to the class the following day.

Spelling is a utilization of the words which she has in her dictionary. She chooses three new words a day, that is, words which she has not used in a spelling lesson and which she needs to study. The study is done by tracing and sounding. Words are then written on the board. When accepted they are written by her in her spelling book. She then chooses three old words for review.

One half hour each day is spent in either listening or reading to some one, some easy reading material. This is prepared silently and then read to a partner.

Progress:

At the end of eight months the girl was promoted to Junior High School with good fifth grade reading ability.

My final case for discussion is to me strikingly interesting.

She came to my attention when she was entering the third grade with a reading deficiency. Her brother, a child of superior mental ability, was in an Opportunity Class.

A Binet test gave the sister an I.Q. of 132. A Snelling card vision examination suggested some lack of fusion and need for refraction. She was given a series of exercises for fusion and fitted with glasses.

Depending upon the fact that the child has high grade mental ability, we hoped that her reading skills would improve with the correction of her vision difficulties. Improvement was very slow, reaching only poor fourth grade ability when she should have been ready to leave the elementary school.

There came to Los Angeles, a daughter-in-law of Dr. George Parkins, Director of the American Research Council of Optometry. Mrs. Parkins had one of Dr. Parkins' binocular synchronizers and had worked in Dr. Parkins' experiment in Nebraska. She is a skilled remedial reading teacher. I asked her to try out the instrument and her teaching abilities on this child. She gave her sixty hour-periods in which she combined the use of the synchronizer and remedial reading techniques. At the end of that time the pupil had reached tenth grade reading ability, according to test, and had become a reader; that is, she read with pleasure books suitable to her age and mental ability.

One might infer that this improvement was due to the improvement to fixations, or the inference might be made that the intense desire of the child coupled with the interest in the approach to the problem were contributing factors. I do not know the answer. I feel there is much need for further experimentation, investigation, and study of all types on the problems of remedial reading.

HEARING AS A FACTOR IN BEHAVIOR

Willard B. Hargrave, Founder, Auricular Foundation, Los Angeles

A study of the literature dealing with hearing as a factor in behavior brings the researcher squarely against the conclusion that he is a pioneer in an unexplored field. It is an unknown quantity. There is some reference to the connection between hearing and behavior, but there is a wide difference of opinion as to the effect of impaired hearing upon behavior. The divergence runs from one extreme of no mention at all as a possible factor, to this writer who contends that impaired hearing is a major factor in behavior.

Previous writings regarding the various factors which play a part in behavior seemingly have been limited to definite fields: the environmental, the hereditary, and the more easily recognized physical limitations of the human element involved. Nor is this surprising. Hearing, of all physical functions, is most difficult to recognize as a possible factor, and until of recent years an almost impossible one. The pyschologist, in propounding a reason for a certain divergence from the normal, can only expound a theory or a reason which he, himself, can explain or detect. If the cause is too obscure, he must fall back upon the stock answer: 'Unknown Causes.'

A study of a boy or girl held to be maladjusted becomes a study within the limitations of the learning of the examiner. He has recognized the deleterious effect of many factors, and checks the subject against those factors. From the literature it would appear that few have checked their subjects against a hearing loss.

Until recent years no method had been evolved for an exact measurement of hearing or hearing defect. Previous methods of testing, such as ticking watch and whispered voice, are now recognized as far from adequate, and admittedly most previous studies of behavior were based upon such types of tests.

With the new and more precise methods of testing in effect, no research has yet drawn an arbitrary line beyond which a hearing defect becomes a handicap and therefore an active factor in behavior. It is vitally important that new knowledge be acquired as to the degree and type of hearing loss which constitutes a handicap. It is known that the range of the human hearing is more than three times the range of the human voice. It is a matter of frequencies, or sounds, and science must learn the effect of losses in a wider span than the voice range before it can arrive at a true conclusion as to the extent of the influence of hearing upon behavior.

In the past it has been assumed that if the subject can hear the human voice, all is well, and that therefore if the subject is maladjusted, hearing must be eliminated as a possible factor. It is upon this erroneous conclusion that most writers have fallen into a line of thought which has led nowhere. In other words, they

have held that because the color-blind man can see the house, he must of necessity be able to see its color. They have failed to recognize that in certain types of hearing impairments, the 'color' has been filtered from voice sounds which prevents the hard-of-hearing person from hearing it. Without that 'color' they hear imperfectly. If in addition to such an impairment their hearing is deficient across the speech or 'vision' range the handicap is yet more pronounced.

It has been found that the person with a minor hearing loss across the entire range often has a better perception of the spoken voice than the one with the same degree of loss in the voice or 'vision' range plus a greater loss in the higher frequencies or 'color' range. The proof of this assertion is readily seen from a study of surveys conducted by the Auricular Foundation among so-called backward and retarded children. In one group 59% had hearing losses predominating in the 'color' range. And it is further noted that more speech defectives have the 'color' deficiency than otherwise.

Throughout the literature are to be found certain generalities concerning delinquents and problem children. Healy has declared that 60% of delinquents are out-and-out truants, and holds that "youthful vagabondage, truancy, is the kindergarten of crime." He also states that "defects of vision and hearing and other physical troubles may also play a part in the formation of trends toward delinquency, as a child with these defects may find school attendance irksome and become a truant." Such statements are hardly in keeping with a later statement by the same writer that "we cannot regard it (deafness) as of any importance except when it has interfered with education, wholesome interests, or occupational success."

Burt is more sure of his ground. In the 'Young Delinquent' under the heading "Pathological Conditions," he says:

> "Partial deafness is a yet more serious (than vision defects) impediment to progress, both of lessons and later on at work. It forms, therefore, a still more frequent cause of backwardness and incompetence; and the sufferers are still more likely to acquire some personal eccentricity as a result. Defective hearing is rarer than defective vision. Marked defects were found in less than 2% of my cases; slight defects in nearly 4%. Cut off, as they are, from free social intercourse, the partially deaf are deprived in early years of any keen awareness of the public opinion around them; they are thus removed from one of the strongest deterents against low and underhanded action. Later on, as he grows up, such a child may become acutely apprehensive about what people may be thinking of his own character or conduct; so gradually takes up a morbid viewpoint, inwardly suspicious, outwardly defiant toward society as a whole.
>
> "This deprivation, this moral exile, as it were, seems to bear with a special burden upon girls; girls are always more dependent on the attitude of others about them. But whether boy or girl, the deaf child soon becomes the forlorn and solitary child--a little human derelict."

There is little to question in that statement other than the reference to the number compared with visory defects. In that, he, like the others who wrote a number of years ago, was handicapped by the lack of means for testing hearing accurately. It must be recognized that if approximately 6% of the subjects examined by Hurt could be discovered by former methods, he might have added many more by audiometric testing. If those 6% were in his opinion 'moral exiles', those he overlooked must have had some degree of the same difficulty, and their hearing defect was at least a contributing factor.

It seems evident that the need for similar research is indicated by recent information as to the extent of hearing losses among children. Little research of a scientific nature has been undertaken as to the effect of slight defects upon educational progress or behavior. Few have recognized minor defects as having any deleterious effect, but that they do play an important role is not to be denied.

In the book, 'Hearing and the School Child,' by J. L. Waldman, F. A. Wade, and C. W. Aretz (Volta Bureau, Washington, D. C., 1931), the authors say in their introduction:

> "Hearing is a most important sense for education and social communication. Economic competence depends in large part on efficient hearing. The deafened individual, though not quite so pitiably handicapped as the blind, is still burdened with a sense of social inferiority, is likely to become retarded educationally, and frequently has to content himself with a restricted choice among a few rather menial occupations which afford a meager income barely sufficient for living. His personality is apt to become warped with restraints, resentments and emotional instability. The person who is very deaf, or totally so, has in most cases been trained with his own kind at an institution and so is fitted to escape from some of these liabilities, but the partially deaf who mingle with normal hearing people may suffer lamentably often without being aware of their incapacity, but their normal hearing associates, who may be equally oblivious of their state, treat them with scant consideration. The problem of detecting children with slight hearing defects early enough in their lives to provide some hope of remedy, becomes therefore one of prime importance."

In the main, this writer agrees with the findings of the survey thus indicated. However, one serious error was made: children with a bad conduct record were eliminated from the study. Without the record of these potential delinquents we are in the dark as to the effect of deafness on behavior, so far as that very fine project is concerned.

The findings are very enlightening from other standpoints, particularly the educational aspect, and a statement in that regard is

worth quoting:

> "There is a marked relationship between hearing and subject achievement among public school children. Hard-of-hearing children are handicapped in learning the subjects in the public elementary curriculum. Even minor losses in hearing tend to lower the level of school attainment. This fact extends the consideration of hearing of school children beyond the purely medical into the rank of a major educational problem."

The survey holds that in terms of the Stanford achievement test poor hearing as shown by the audiometer has more effect on achievement than visual tests, and follows with the not-so-surprising conclusion that a comparison of defective hearers with an equal number of very good hearers reveals that the difference in educational achievement is almost a year and a half.

With the educational achievement factor in mind, the statement of Dr. John Slawson in the 'Delinquent Boy' is interesting:

> "The greatest difference between the delinquent (reform school boys) and the non-delinquent groups, (public school children) is in the sensory realm, where we find that among delinquents there are about 2.7 times as many who have defective vision and from 4 to 10 times as many who suffer from defective hearing.
>
> "Hence, since we have demonstrated a preponderance of sensory defects among delinquent boys...appropriate remedial measures should be applied to alleviate this condition among delinquent boys from point of view of therapeutics and among non-delinquents as possible prevention."

Dr. George Mangold says:

> "Physical defects, such as those of eye and ear, sometimes affect disposition of children. Their removal would undoubtedly lessen the amount of juvenile delinquency."

The extreme of both school failure and wrongful behavior indicate hearing as a major factor even when the hearing loss is a minor one. The fact of medical proof that a hearing defect can be corrected or prevented from becoming worse if detected in time, places the entire problem in the category of a major oversight in child welfare. There is little excuse for the slowness in examining all school children for this often hidden defect when we consider the seriousness of its effect upon the child, educationally, socially, and economically.

A nervous strain is placed upon the deafened which plays a strong part in behavior. Medical men are agreed that losses in the high frequencies are due to a nerve condition. As yet we

know little of the effect of this nerve impairment upon other nerves of the body which may account for the jumpiness and over activity of many children with such losses.

The association of normal hearing people and the hard-of-hearing is an abnormal relationship if the hearing defect is unknown or held to be of no consequence. Children have the faculty of realizing wherein they differ from others, such as in height and weight, but none have the ability to know that a hidden physical defect may account for differences in achievement in the class room. Their reaction may follow various channels in keeping with the natural tendencies of the child

Unfortunately few people are capable of recognizing a minor hearing defect for what it is, erroneously interpreting chronic misunderstanding as either mental imperfection or willful disobediance. Few people have any knowledge of the carrying power of sound and that vastly more energy is required to set in motion the mechanism of the defective ear as compared with the normal ear. Modern psychology admits the error of indiscriminate punishment for disobediance, yet each criticism of the hard-of-hearing child for failure to hear is in a sense unjust punishment.

Environmental dissatisfaction is given by most authorities as the principal cause of deliquency or maladjustment. It becomes readily understandable how a hard-of-hearing child, punished for things he had not heard, tormented by playmates as 'dumb', and retarded in school because of his affliction, may seek to assert his individuality in anti-social conduct, or become as Burt describes, a human derelict. The burden is not and should not be upon the child, yet that is where it is placed when a child fails at promotion because of deafness. If in addition to this he is made to feel that his affliction, of all human frailties, is something shameful, do not blame him if his natural human instinct to fight back gets him into trouble.

The child with a hearing defect should not receive maudlin sympathy; give him only understanding and the special attention necessary to enable him to overcome his handicap. Unnatural attention will react as readily with the hard-of-hearing child as with any other. It should be the task of the parent and teacher not to err in moulding the character of the deafened boy or girl; to find in their affliction not an excuse for failure, but rather an obstacle which can and must be surmounted. In intelligence, even when measured with a yard-stick which allows no extenuation for deafness and therefore penalizes them for things not heard in a given period of time, they are not far behind those of good hearing. Their retardation or backwardness indicates the necessity of an adjustment of the school system to fit their particular needs.

In admitting its obligation to youth society can no longer ignore its obligation to hard-of-hearing children. Their number

is legion and no school district is without them. Recent surveys by the Auricular Foundation indicate a hearing loss in the low or high frquencies or both in almost one-third of the school population. If ignored, the majority of them will suffer in the years to come, as deafness is usually progressive. When it is found that medical science can do nothing, then it becomes the duty of the school to supplement routine education with speech reading and special education.

The school which procrastinates with hearing tests is guilty of negligence. For in permitting a hard-of-hearing child to go undetected it fails in its primary duty; to give to that child a full and complete chance to develop its natural capabilities.

THE MOTION PICTURE IN COMMUNITY AND SCHOOL LIFE

Mrs. Leo B. Hedges, State Chairman of Motion Pictures, California Congress of Parents and Teachers

I am only a lay person in this work, but I can claim a longer period of service than most of the professional people in the visual field. My interest in the educational possibility inherent in the film as a teaching tool began when I was a student in Teachers College. My active work for the constructive use of the films in both the field of education and entertainment began when I joined the P.T.A. at the time my daughter entered kindergarten, seventeen years ago.

We believed then and many educators agreed that youngsters should have motion pictures as a learning aid. We believed then and still do that a good teacher can do a superior piece of work aided by motion picture and that a fair, unimaginative teacher really needs films as an aid in her work.

Educators and all socially conscious people realize that education has an enormous job to do if we are to prepare our young people for life. We are aware of the need for knowledge and information about so many more things if young people are to be able to meet this complex world. This is the challenge to education, and if educators are to meet it they must use modern tools. The school day simply is not long enough for more subjects to be crowded into it; therefore, it would seem that we will either continue to evade our responsibility or we will take advantage of teaching aids that will present information more quickly, leaving time for new subjects.

Let me mention a few of our vital modern problems that I see and want the school to influence. I would put first motion picture and radio appreciation. I want to discuss these more fully later. The appalling number of accidents both in the home and on the highway shows the need of safety education. Industry through education is lowering its accidents. We know that most of our students completing grammar school will have one vocation, that of homemaking and rearing a family. We give them a small bit of preparation for this, the most important vocation in the world, in high school. Why not begin in the grade schools and reach that group who do not go on to high school. All thinking people can add to this list. Now I will go back to motion picture appreciation.

A few people go to plays and concerts for entertainment. Men and a few women follow sports. A great many people read the newspaper and a goodly number read magazines and books. But almost everyone goes to the movies and listens to the radio. Possibly because they are so accessible and cheap. So why not teach them to spend their time and money wisely by giving them standards for the evaluation of the movies by beginning with them as children.

We are past the experimental stage in motion picture appreciation and have proven that with a little guidance and study students become

discriminating. In a short time we could build a new motion picture audience. You cannot separate motion picture art from its ethics. They merge, I believe. With the study of the subject in the school our next generations of parents will realize that movies do effect the mental, emotional, and physical health of children.

A Los Angeles Teacher conducted an interesting experiment with the film, "Jessie James." She knew all the children would see it and that its ethics was all wrong. So she divided her six grade class into two groups. One group discussed the film before seeing it, the other had no discussion. The reactions of the two groups were compared. The second group said that Jesse James was a great guy, that he was persecuted, that he was right in trying to get even for the way his mother had been treated. The first group said that his whole life was tragic. They said that killing got into his blood and that he killed for the love of killing and the excitement of it. This is just a sample test but it proves we can do a great deal more. We have found that children will begin to choose better pictures after just a little discussion and training in evaluation. This may be a possible solution for our motion picture problem. Why don't we give it a trial?

We are giving to those parents, who care for it, reviews of motion pictures which enable them to decide which films are suitable for children. Aside from that we are not accomplishing much else. I am discouraged at times, but because so much needs to be done one must keep on. However, much more help is needed from the school people.

The attitude of the community toward the motion picture theater and its child audience puzzles me. It is so different from its attitude toward the three other agencies that deal with children -- I mean the public schools, the libraries, and the playgrounds. Teachers, librarians, and playground directors are educated and trained to work with children. With teachers we safeguard children's welfare by placing a principal over the teacher, a superintendent over the principal, and a board of education directly responsible to the community over the superintendent. Then we go so far as to prescribe the curriculum which teachers follow. Toward the theater manager our attitude is one of almost indifference. In many communities he is scarcely known. A good portion of his programs are entirely unsuitable for the large child audience which sees them. The length alone is almost beyond adult endurance. I challenge adults to sit through a Saturday children's matinee. We conducted a survey of Saturday programs in fifty Los Angeles theaters, and found that 76% of the films were unsuitable not only from the standpoint of length, but that at least one of the films was suitable only for adult entertainment.

The motion picture industry will not give programs for children so long as parents permit their children to go to these adult programs. Social responsibility does not weigh very heavy on its conscience

and without any additional cost they already have a child audience.

What can the community do about it? I have some suggestions which I think would better present conditions. I believe that they are worth a try. First, through legislation I think we should prohibit unaccompanied children under eight or ten years of age from attending the theater. If parents had to attend with their children they will realize what their children are seeing and the nerve and emotional strain resulting from these overly exciting, overlong programs. Too, it would probably eliminate the common practice of child baiting with candy and prizes.

Next, I think we should use 16m.m. films and children's plays in our public auditoriums. Royce Hall at Westwood has been giving such programs for more than a year and has built up a nice audience of children whose parents care what they see. Others are gradually coming, too.

All those years that I have watched the film in education and impatiently hoped for the expansion of its use, I have watched and had close contact with the entertainment film industry and seen its almost magic financial growth and artistic development.

The Los Angeles City Visual Education Department is entering its twentieth year. Over this period it has proved---along with a number of other visual centers--that the film has great classroom value. If educators had acted upon that knowledge and purchased films that were produced for their use over those years we would now have an educational film industry that would adequately serve all the subjects in the school field. I have known many people who have lost their entire investment trying to make films which educators said they wanted. I have grown to marvel at the spirit of optimism which has permitted men to continue to put money into educational films in spite of the fact that no one has ever made money on them so far. They always seem to be able to persuade themselves that they won't make the mistakes the other fellow made, or that they will produce a different subject or that over night the strings of the budget will loosen to include films.

I believe that we should use the 16m.m. film, for in its use lies the answer to our child entertainment problem. It is tragic to permit this constructive educational medium to turn out almost exclusively adult fiction. It is just as though the printing press ignored children's fiction and the whole field of non-fiction and text material. The 16m.m. film belongs to educators to do with what we will. If we will use it we would soon bring the price down and the artistic quality up. The only thing holding us back is that educators as a whole are not really convinced of the value of films in the classroom. If we are, why is it that each June our teacher's colleges continue to graduate students with training in the use of every teaching tool except the film.

May I touch those points again: I have been near Hollywood and have watched the industry grow from a nickelodeon to the present 35m.m. film. The 16m.m. has stood still because of no drive or urge back of it. But I think it has several solutions for us. The use of 16m.m. film will clear our overcrowded school day and will give us time for some of our pet subjects -- motion picture appreciation, for example. We have done something with music and art and drama appreciation. We have an audience for the Hollywood Bowl concerts. We have an audience which crowds the Palace of Fine Arts, because our schools have taught several generations to know and appreciate fine art and music. I think we could do the same thing with motion pictures, but we cannot at present because the school day is too crowded. I want them to go more into the building of good future parents. We would then have more intelligent parents. Parents are my problem in the theater. These things loom large, but we cannot do much because of our over-crowded day. Maybe I am all wrong, as I am just a lay person, but I feel all this very strongly.

SOME BASIC PRINCIPLES OF TEACHING READING

Mrs. Lute Kanzelmeyer, Claremont Elementary School

Today educational literature presents a wide range of conceptions as to what constitutes the reading act. They range all the way from that which defines it as a specific act in which we are concerned with printed word symbols and their meanings to the conception which states that "generically, reading is a process of making discriminating reactions to any kind of stimuli." The entire field of learning is covered by this generic conception whereas only the field of printed word symbols receives attention in the more specific concept.

Perhaps because of dissatisfaction with the results of a procedure based upon this specific concept, present educational thought seems to be reaching out far beyond present educational practice toward the broader point of view. We are noting many failures of the old procedure and yet methods are slow to absorb and reflect the new thought. However, it is encouraging that there is evidence of more interest in the theory that successful living depends upon more than ability to read printed word symbols.

From this point of view book reading becomes merely a specialized act in the "whole" of language development and but one of the many forms of discrimination involved in reading. The reading program becomes a twenty-four-hour-a-day, a three-hundred-sixty-five-day-a-year program spreading from birth until life, at least functional life, ceases. It can no longer be considered a program involving only a few minutes of each day spent with books. It embraces all the activities of the reader, the teacher, the classroom, the home, and the community.

Such elements of the program as that of readiness for reading printed word symbols takes on a different meaning than the conventional one generally accepted with the narrow definition of reading. Readiness to read becomes much more than a mere chronological age and a suitable mental age. It becomes a matter of inheritance, nutrition, physical equipment, experience, emotional stability, suitable opportunity, and purpose. In the degree to which this readiness has been developed, learning will take place.

I shall discuss briefly possibilities for developing in those children with whom we are privileged to work, first, ability to read in this broad sense of the word, and second, ability in that specialized act known as the reading of printed word symbols.

Experiencing is the basis of all intellectual growth. By experiencing we do not mean merely "doing" but rather performing with insight, understanding and appreciation. Therefore, meaningful experience becomes the first basic principle in all of reading. The home becomes the first school and the parents, the first teachers. If we are to believe such students of the child as Gesell, probably the most important school and the most important teachers. This

expresses a fundamental responsibility of parenthood and indicates a comparable responsibility on the part of society for provision of training for parenthood.

During the early years of the child's life, the foundation is laid for many of the skills in this broad reading program. Let us enumerate and discuss briefly a few of these basic skills, if we may call them such.

First, there is healthful living. A way of life that will result in abundant health for the individual should be one of the skills developed during these early years. No one can achieve the fullest success which his native abilities warrant without the strength which comes from physical and mental health. An intelligent and consistent program of training in food habits, rest habits, habits of physical exercise, et cetera, is sure to bring to maturity an individual better able to interpret all of the experiences of life more fully.

Closely related to health and no doubt bearing greatly upon it is the emotional stability of the individual. The child who has ruled the home for four and a half years by means of temper tantrums of fits of pouting or crying is put to a serious disadvantage when he enters the public school kindergarten. Here, no one child can rule, certainly not by such drastic means. Immediately this child experiences failure, terrific failure with his fellow associates and with his teacher. His previous training in reading is all wrong. He is forced to break down old reading habits and establish new ones. It is impossible to measure the influence of this imperative change on the "whole personality" of the child. On the other hand, the child from a home which has developed emotional stability enters the larger group able to exercise some degree of self control. He meets each situation with sufficient control of self to enable him to center his thought upon the experience at hand. Each experience becomes meaningful since his energies are not all required attempting to make those emotional adjustments which must come before an individual can function within a group.

Each individual must take his place in society. Early training which enables a child to show a certain amount of consideration for others, to conform to a certain degree for the good of the group, to desire to share with others and to do for others, gives that child a basis for making himself a functioning part of any group. From the time he enters school, life is to be concerned with many others. The child who has not discovered that there are other important persons in the world prior to his entrance in school must learn it there. Often this period of social adjustment is very difficult for the child. There is no question but that this is one of the most important phases of the entire reading program.

Self confidence is a factor in any learning situation. Each individual needs to discover his own capabilities early. He needs to know that he has the power to meet various situations as they arise.

This implies intelligent independence of thought and action tempered with the right amount of self confidence.

Development of power in the field of words has its foundation in these all-important first years of life. Words make experiences more meaningful.

A normal child naturally uses words -- he naturally talks. As one observes the small child at play, a continuous chatter is noted. Often this chatter is rhythmic and full of poetic feeling. These spontaneous poems quickly jotted down and read to the child will encourage him to give more. Dr. Dorothy Baruch and those working with her have done much of this type of expression among children of preschool and kindergarten age.

Following are several such poems given by six year olds:

Wind, wind
You blow so hard;
You blow the leaves
About the yard;
You blow the leaves
Into the garden;
You blow them
Night and day.
--Jimmy

Fairies,
Dancing and playing
And hiding in the flowers
When night time comes.

But,
When the sun begins to shine
The fairies go to bed
In their flowers.
--David

From the beginning the child should be encouraged to talk and helped to talk distinctly and correctly. The child who forms sloven habits of speech has a period of reconstruction ahead. Sometime, somehow, he is going to have to tear down the poor habit and rebuild with a better one. Often this reconstruction act is exceedingly difficult and embarrassing to the individual.

A definite effort should be made to increase the child's vocabulary. By vocabulary is meant both the concept and the word symbol. Conversation with adults and other children and listening to well written stories are valuable means toward that end. Each new experience should serve to refine and develop the vocabulary of the small child. A visit to the zoo for instance, will bring many new words and give new meanings to old words for the child never having had that experience. Wise teachers and parents provide activities which give opportunity for thus increasing the child's vocabulary.

The child's natural interest in life all about him opens a fine field for teaching reading in this broad sense of the word. The first essential, of course, is that the teacher himself be able to read understandingly the wonders of nature. No one will help the child to read into the landscape the beauty of the giant oak on the hillside or the glories of the evening sunset unless he himself can see it. No one can help the child interpret the scientific truths surrounding him who is not able or is not willing to take the time to answer the first questions as "Where does the rain come from?;""How does the flower grow?". Natural phenomena intrigue the child. Yet how few adults are able to develop in the child ability to read in that field because they themselves cannot read it.

The field of music unfolds as naturally for the child as does any of the other fields of expression. The happy child sings as he plays. He should be helped to find that clear head-tone which is the true singing voice of any little child. He should learn many simple songs and be encouraged to sing his own thoughts.

Training in rhythm may begin very early. The child should have much opportunity to become an actual part of the music which he hears through motor responses created by himself. The imagination of one child may lead him to spontaneous dramatization, while another will sway to the rhythm, another dance, and yet another perhaps only listen attentively.

From such a simple, early beginning of reading in the field of music a child may advance very rapidly into an appreciation and understanding of the finest that music offers. Six-year olds will read into such masterpieces as Schubert's Unfinished Sumphony or Haydn's Surprise Symphony discriminative interpretations that surprise the trained adult. Surround the child with musical experiences of the right kind if you would have him learn to interpret that type of music.

Every child draws and paints as naturally as he talks or sings. Give him materials, opportunity, inspiration, and purpose, and he will astonish you with his ability. He will grow in this form of self-expression and appreciation as his powers of insight and discrimination develop.

If these skills which we have briefly discussed, namely, abundant healthful living, emotional stability, good social performance, fluent use of spoken language, and ability to discriminate and perform in the fields of natural phenomena, music, and art enable an individual to interpret life more fully, are they not worth consideration from every teacher for every curriculum? What becomes of these natural abilities which we note in the small child? Can it be that, in the past our educational system with its great emphasis on the printed word or verbalized experience has not only failed to develop these phases of reading for every individual but in many cases has suppressed natural ability along these lines?

Now let us consider the development of that specialized act, the reading of printed word symbols.

All experience in the broad reading program will function in this specialized act.

I reiterate, readiness to read printed word symbols is more than a mere chronological age and suitable mental age. It is a matter of inheritance, nutrition, physical equipment, emotional stability, experience, suitable opportunity, and purpose.

There is not much we can do about the biological inheritance of the child when he appears in our classrooms, although no doubt some one should be held responsible for the child of poor biological ancestry. Perhaps here is another opportunity to help the child by means of definite pre-parental education. However, there is no doubt but that biological inheritance is a factor in the development of ability in this type of reading. Many studies bear out the theory that the child of low mentality has much less chance to succeed with this skill than his more fortunate classmate, all other things being relatively equal.

Nutrition is no doubt a factor in good reading behavior. There is evidence that eye functions are seriously affected by dietary deficiencies. Certainly the "desire to achieve" would be lessened by malnutrition.

Results of malnutrition show in all classes of children. Malnutrition is not the same as non-nutrition. It does not necessarily mean lack of abundance of food but implies a qualitiative deficiency. The condition often exists without the home realizing it. The school needs to be capable of detecting this deficiency in the child and willing to work with the home to correct the condition.

Physical equipment which functions directly in the reading act are good eyes, good ears, good speech organs, and properly functioning glands.

Dr. Kelly discussed the function of the eye so ably in his talk on "Teaching Pupils to See" at our last meeting that I shall not go into detail. Enough to call to your mind that the small child is far-sighted. This fact implies that his eyes may not be ready for reading at close range until the age of six and then only when this act is interspersed with opportunities for distant seeing. You will remember Dr. Kelly's warning to keep all reading at long distance range as long as it is possible and to make the change to reading at close range gradually and only after gross eye-deficiencies have been detected and, when necessary, corrected by a specialist. I heartily endorse this suggestion for the use of the stereoscope as intermediary training. I find six-year olds intrigued with the apparatus and feel that much benefit is derived from the four stereoscopes which are accessible at all times in my classroom.

Good hearing receives much less attention than good eye-sight in our reading program. Yet it is probably of equal importance, especially since we know so little about it and are so handicapped in ability to measure it. There is no adequate means of measuring hearing until third grade level. Even then, the high cost of an audiometer prevents its universal use. By the time we are able to measure his hearing, the hard-of-hearing child has probably established a condition of physical and psychological maladjustment. He has been unable to build up the necessary reading foundation because of his inability to respond normally to sounds, to language, to social and emotional situations. He is usually considered dull and is often treated as a mentally deficient child.

Still other children have a very narrow range of hearing ability. The average person uses only a small part of the possible range of frequencies. This human range for sound is from 15 to 15,000 vibrations per second. From 40 to 3,000 or 4,000 vibrations per second is the usual range used. An extremely acute ear can hear as high as 20,000 vibrations. Auditory acuity depends upon the width and completeness of range. It can be developed by practice, barring structural imperfections. It is difficult for children who are not able to distinguish high frequencies to make the fine discriminations in sound necessary for learning to read oral speech.

The sense of hearing has probably not been utilized to nearly its fullest possibility in our learning or teaching pattern. Little has been done to train children to listen well. Consequently we have poor listeners even among our adults. With the child, this has a tremendous influence upon language development and the development of appreciation and discrimination.

Teachers who have no access to the audiometer must develop a technique for detecting gross deficiencies in hearing. Close observation of the child and his reactions to sound over a period of time may prove of help. The watch test may also be used. Betts in his Reading Readiness Tests, Gates in his Reading Diagnostic Battery, and Scoffield in the book "Better Speech for Better Reading," give other tests for determining the ability for making discrimination in sound, phonetic blending and auditory memory.

Speech is the basis for reading not only from the standpoint of performance but also in ideational and discriminative development. For this reason as an element in a reading program it should perhaps receive first consideration.

The speech mechanism is extemely complicated. It is not a single organ as is the eye for seeing, but is rather composed of many parts of the body which have other primary functions. Active speech involves structures from the nose down to the muscles of the abdomen.

The correction of such defects as lisping, use of baby talk, producing sounds that the individual has not yet learned to produce, are all matters of re-education. Many of these difficulties could be avoided by proper initial training.

A pleasing speaking voice is part of speech performance. Not much is done in our schools toward developing excellent quality in the speaking voice. One has only to spend a short time in the presence of a person possessing a pleasing voice to realize its advantages. Voice training should, no doubt, be a definite part of teacher training and training for parenthood.

While we know very little concerning the glands functioning within the body of the child, we are beginning to realize how closely the attitude of some children to reading is tied up with dysfunctioning of their glandular system. The effect upon intelligence, vision, behavior, and emotional reactions is such that we are likely to attempt to treat the effect rather than the cause.

Work in the field of medicine along this line is still experimental. Such results as those related by Dr. Florence Mateer in her book. "Glands and Efficient Behavior" make one realize the possibilities in this field.

Some of the ordinary symptoms indicating glandular imbalance are, excessive overweight, overactiveness, extreme nervousness, emotional extremes, physical underdevelopment, temper tantrums, and abnormal sexual development.

While this rapid discussion of physical factors in the teaching of reading has been far from exhaustive, perhaps it has been sufficient to bring out my point that no teacher has a right to expect good reading behavior of a child who is suffering from any or several of the above mentioned physical handicaps. As teachers, we need be aware of the importance of physical fitness in this complicated act. We must be ever alert for the detection of physical handicaps. The best of techniques cannot but fail if the learner is seriously handicapped physically. No doubt, too little attention is given this factor in the reading programs of our schools today.

The child who is not at peace with himself or the rest of the world emotionally has more or less difficulty in this specialized phase of reading. He will often fail to enjoy and profit by those normal experiences about which his associates read, talk, and write. He may fail to develop necessary habits of attention. His social adjustment is usually retarded.

Assuming that the child is fortunate enough to have at least a good normal inheritance, is properly and regularly fed, has no physical defects to retard his progress, and is well adjusted emotionally and socially, we are ready to set up about him suitable experience, opportunity, and purpose to insure his learning to read from books.

There are two general methods now in use in the teaching of beginning reading, namely, the formal method which adheres closely to a basic series of readers, and the experimental method which bases its early reading entirely upon the experiences of the group.

Teachers using the more formal method have but to follow the authors plan for teaching as outlined in the manual which accompanies

the basic reader set. Work books and supplementary texts are usually used. While this method may produce book readers more quickly than the experiential method, it has its dangers. Often the vicarious experiences met in the book have little meaning for the reader because he has had slight experience to help him interpret. There is also grave danger of physical defects developing because of too early close reading.

The Experiential Method is used in our more progressive schools today. The most progressive schools carrying on delayed reading programs, that is, delaying actual reading of printed word symbols until the child has had much school experience. Many schools are not beginning definite reading instruction until the second grade. Personally, I am of the opinion that many children are ready to read printed word symbols before that time and that no harm will ensue if too much close range reading is avoided and if the teacher is able to detect gross deficiencies which would handicap the individual and treat them accordingly.

For those children who are ready, actual instruction may begin, then, at First Grade level. The First Grade classroom should be a veritable laboratory for experience. Here the child should find much to challenge his mental and creative powers. He should be surrounded with blocks to build, puzzles to solve, books to enjoy, paints, crayolas, plasteline, chalk and blackboard for his own use, good pictures to think and talk about, pets to care for and play with, musical instruments to play, games to play individually for big muscle development and eye and hand coordination, games to play with others for social development, tools and lumber for the group that expects to use big construction in the units of work for the year, and many other materials to meet the needs of a wide range of abilities so that every child may be interested and challenged.

No doubt the most important single factor in any classroom is the teacher. It is essential that the teacher at this level have definite techniques of her own based upon a side knowledge and sympathetic understanding of the child and of the skills which can best be developed at this age.

Today, probably more than ever before, children need time to enjoy and appreciate and discriminate. No six year old should be hurried through one experience after another. There should be opportunity for each child to experience fully.

Soon stories concerning the activities of the group will begin to develop. These stories written on the blackboard furnish the first material for actual reading instruction.

The story is read first as a "whole". Many stories may be read as "wholes." Next the children learn to distinguish sentences within the "whole", then phrases within the sentence, words within the phrases, and finally words and sounds within words.

Large charts printed by the teacher and illustrated by the children form a permanent record of these stories and also furnish opportunity to re-read favorite stories again and again. As power in insight and discrimination develop, the old stories take on new meaning.

The projector may be used to give another valuable experience in long distance reading. The use of this instrument makes it possible to put a great deal of material before the child, since slides may be easily and quickly prepared by the teacher to meet the needs of the entire group or of a small group. It also relieves monotony in these early reading experiences. The child may now read from the board, the chart, and the screen. The picture-show appeal should not be overlooked.

Commercially prepared slides may be purchased which give an excellent method of entrance into the vicarious experience of book reading. They also may be used to inspire language experience, the development of number concepts, and experience for use in units of work. Stereoscopes and stereoscopic views are used in connection with the projector.

Thus a basic word recognition vocabulary of 250 or 300 sight words is built up through many experiences in long-distance reading before books are given to the child. When he does receive the preprimer he finds only words that he knows and thinks he has always known. So the child approaches this book reading experience naturally and without the strain and mystification and defeat that many children suffer who are forced into books too early.

Experiential stories continue to be read as the children take up preprimers. All children will not enter books at the same time, in fact some children may continue reading from their own experiences most of the year.

Much simple material is used. Fluent and thoughtful reading is essential. Forty different sets of preprimers are used in my First Grade followed by experience in many primers. Only the most precocious readers and physically mature children have any contact with the First Readers there.

No use is made of flash cards as such. For the child who is having difficulty with word discrimination, much opportunity is given for matching like sentences, phrases, and words. Cards are often used for this purpose.

Just as no two children cut their teeth at precisely the same time, nor begin to walk on exactly the same day, so, no two children learn to read simultaneously or by exactly the same method. That is where the skill of the teacher functions. She may need to use as many methods of procedure as she has children under her care. This necessitates working with very small groups. The more individual beginning reading instruction can be, the more effective it will be. For this reason there should be not more than twenty-five pupils in any first grade.

The reading program, in order to function, must be a program of the whole school from the kindergarten through college. No one teacher can be responsible for the success or failure of any child.

A good kindergarten has a very definite place in the reading program. Social and emotional adjustments necessary to school life should be made here. Many devices may be worked out for use here to increase attention span and habits of attention. Activities which help the child to see likenesses in objects, pictures, etc. here will give him insight for discrimination in the field of words. Language ability may be greatly increased at this level. Here the child should have much opportunity for self expression in the fields of music and art. The desire to read and a knowledge of what reading is may be developed here. Hearing phonetic sounds in words should be a part of kindergarten experience. Number concepts should receive attention at this level. One might go on and on enumerating such opportunities for the kindergarten to fit into the whole school reading program.

In the old days when we all used the basic series methods and taught reading from commercial charts or books from the first day of school in First Grade, we gave the child until the end of third grade to master the mechanics of reading. We then expected him to be able to read from a First Reader at the end of the first year. Some parents and even some teachers of second grade still think that any child who cannot read any First Reader at the end of first grade has failed. Of course, we who have seen the child grow day by day in confidence and reading ability know that he has not failed but for the child's good everyone concerned with him must know it. Every teacher of second and third grade needs as flexible a program as any first grade teacher in order that every child may continue to develop reading skill at his own rate. Parents need help to understand this phase of child development.

All teachers need to know how to develop reading power at the level at which they meet the child. High School freshmen should not be expected to read General Science material successfully without a background of experience which will give them word forms and meanings with which to make discriminative reactions.

Perhaps a few physical features of the classroom should be mentioned as basic in this reading program, especially since every teacher is responsible for the comfort and adequacy of the physical features of his classroom.

Only recently have we realized how poorly many of our modern schoolrooms are lighted. Experiments have been carried on to show the inadequacy of light for study and health purposes and the educational gains to be derived from improving existing conditions. The National Society for the Prevention of Blindness, in their publication Number 54, give 10 to 12 foot-candles of light as a minimum on any working surface for close work such as reading printed words. Many schoolrooms today being used show less than 1 foot-candle as

measured by the meter in many parts of the room. This is made doubly hard for the children working in these dark areas because of the contrast made by the brighter spots in the room. Such a room should be remedied by artificial lighting. This same publication makes recommendations for proper artificial lighting arrangements.

It will probably fall to the school to educate the home concerning the necessity and value of sufficient light for use. Every child should have a comfortable and properly lighted place to study at home.

Knudsen in his "Architectural Accoustics" says, "Good accoustics is even more important than good lighting." Chenowith and Selkirk in "School Health Problems" says, "Even moderate reverberations interfere with instruction in schools. They confuse the teacher and students, and irritate the nervous systems of both. This leads to excessive fatigue. Noise is contributing to the excessive amount of functional derangement of the nervous systems of teachers and pupils." Properly covered or constructed walls will absorb 90% of the sound received.

Ventilation is a problem every teacher must meet. It is a matter of maintaining free circulation of air at about 68 to 70 degrees temperature, with humidity equal to that of the air out-of-doors and free from drafts. Poor ventilation may be a contributing cause to poor reading behavior due to inattention. The health angle is of vital concern.

For the purpose of the modern, informal, classroom activity, there must be floor space, work space, library space, exhibit space, and comfortable seating accomodations. Movable furniture is almost essential. Adjustable seats are preferable with desks that slant for book reading, writing, and art work. The book supported at an angle of about 60 degrees for reading automatically improves sitting posture, increases the span of attention, and decreases fatigue. Children may be trained to hold their books at such an angle if racks or adjustable tables are not available.

In conclusion may I suggest that in our frantic attempt to develop skills and cover subject matter, we do not lose sight of the fact that, day by day, the complete personality of the child is growing. The "whole" child demands our attention. All the factors mentioned this afternoon and many more need serious attention.

As you plan your work for the coming year, will you keep in mind that reading is not confined to printed word symbols? Any activity which develops understanding is reading: Any experience carried on in such a way as to result in refining and enlarging an individual's behavior pattern is a real reading act.

TRAINING PUPILS TO SEE

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A recent statement of the objectives of reading made before a conference similar to this one will be taken by those of us who are concerned with the problems of vision as such, as a decided "cause for alarm" from the fact that they seem to be in the main adult objectives.

We grant readily enough that an adult may be concerned with high-speed reading paralleled if possible by a high degree of comprehension. We admit that with the average reader oral reading is a lost art or perhaps one never attained. We may even admit that in certain types of reading verbal accuracy may not be necessary. But from the standpoint of the growing young organism - the child - who is being called upon to use the visual skills which he has already acquired, and to add to them a whole new set of visual skills with the development of all the elaborate reflexes which are necessary for the effortless repetition, these objectives are far from being satisfactory. We will attempt to show in this paper reasons why reading objectives should change in accordance with the visual ability and agility of the child as he proceeds from one developmental age to another.

Please note that my subject is not training pupils to read, but training pupils to see. Much of our teaching in the past seems to have been predicated upon the assumption that seeing is to be taken for granted, that eye skills are hereditary skills, or that perhaps they are instinctive and perhaps except in very rare instances when a child may need glasses for some obvious visual defect, every child should be able to execute all of the visual tasks imposed upon him without benefit of any educational assistance. Perhaps we may learn some day that all children, regardless of the absence of apparent visual defects, need careful supervision of their visual habits quite as much as they need assistance in the proper development of more obvious coordinations.

In order to explain what we mean by this highly complex series of motor and sensory coordinations which is called vision, let us consider some of the physical changes thrugh which every child must pass. For purposes of visual study, a new born child would constitute the most useful bit of laboratory apparatus with which we could be equipped. Very careful observation would show that the little child up to the age of about five weeks is probably conscious only of light and shadow contrasts. It is a matter of common note that coordination of the two eyes is quite rudimentary and haphazard. The eyes can be observed to turn in different directions, by which we mean they are not always parallel, that they do not follow a moving light or moving object with accuracy and, as may be inferred to some extent by the lustrous character of the eye they do not see well defined forms and shapes, or we may say they do not focus.

From about five weeks to about six months gross eye coordination develops with great rapidity. The first real act of coordination is the movement of the two eyes together up and down as the child follows the stimulus of a moving light or a moving shadow such as is produced by the mother or the nurse as she moves about in the room. Such a movement of the two eyes together through the same number of degrees of turning in either direction may be called a concomitant motion, or simply commitant. The development of commitance should be watched with great care since many of the more pronounced phases of ocular dysfunction are accompanied by a lack of it.

Shortly after the development of vertical commitance, the child begins to follow moving lights or objects from side to side with little or no head motion and with eyes in parallel. This type of concomitant motion develops rapidly,the eyes become clearer, and variations of expression become more pronounced as the entire body expresses pleasure at this new series of sensations.

It should be noted that up to this age there is very little convergence of the eyes. It may occur sometimes, but more or less accidentally and without habitual response to appropriate stimuli. It would be well if mothers and nurses knew more about this orderly development of vision. Eyes during all of this period are becoming adjusted to distant vision which is normal to practically every child. He is developing his discrimination for forms and possibly color by a trial and error method. It should be quite obvious that the rather common practice of dangling a colored ball or a beautiful pink elephant within a foot or two of the child's eyes during the period of infancy does not afford an appropriate stimulus for satisfactory vision. It is our opinion that if such a procedure does occasionally elicit a smile from the innocent victim, it may not be because of any pleasurable sensation, but only because of his amusement at the futility of the mother's technique.

Sometime after the age of six months and continuing with increasing accuracy to about the age of two years another visual function commonly called convergence begins to develop. It will be noted that, occasionally, when a relatively small object is brought within arm's length of the little child, the two eyes will turn toward each other or converge. This act will not be consistent at all times nor will it be an invariable reaction. But it will become more and more frequent and the amount of deviation will begin to increase with the nearness of the object to the eyes. Up to this time, if there has been any adequate mental interpretation of the images which are falling upon the two retinas, all near-by objects must have appeared to

be double. Apparently at this stage the demand for single image begins to assert itself, and probably by some accident of convergence this pleasurable sensation is brought about. If this pleasurable sensation repeatedly accompanies the art of convergence their coincidence becomes habitual and another eye habit has been initiated.

Perhaps an illustration of just what is taking place when convergence occurs would be appropriate at this time. Suppose we all try a little experiment. With both eyes open, hold up the finger of your right hand at arm's length, and assure yourself that with binocular vision you see but one finger. Now without changing the fixation of your eyes, bring up the forefinger of the left hand half way between the eyes and the other finger until the two are in line. The nearer finger appears to be double. Now shift your attention to the finger nearest the eye. The more distant finger now appears to be double. This should be convincing evidence that we are at all times "seeing double" except for the one object of regard toward which our conscious attention is directed. Most of us have learned to inhibit the sensation of double imagery and to interpret only the single image of the object of conscious regard. But the fact remains that this is an eye skill which must be learned by repeated trial if satisfactory binocular vision is to be attained. Since double vision or diplopia is an almost intolerable condition, if it cannot be learned some sort of defense will be set up in the nervous system by which single imagery can be attained in some other way. It is pertinent to note that search of carefully made case records of cross-eyed children will show that by far the greatest number of "age of onset" is six months and the next greatest number is two years. Apparently in such children to attain single imagery by convergence is an insurmountable obstacle. Since diplopia is intolerable and single image can be attained by the use of one eye alone the satisfactory result is attained by turning the other eye in or out so that the images in the two eyes will cause the least interference in the interpretative mechanism. To further reduce the interference the inturning eye becomes partially blind, a condition which is known as amblyopia exanopsia, or loss of vision due to non-use. Even in eyes which do not actually turn in or out but which to all casual observations appear to coordinate properly, there often develops a condition where vision is suspended in one eye, the other carrying the visual load all unkown to the owner of the eyes. This condition is very common among adults and is often detected in children at the period when they are learning to read. It will help us to visualize the formation of the habits so far mentioned if we pause to speak of the extra-ocular muscles by which all of these movements of the eyes so far considered must be produced. Each eye ball floats

in its conical shaped orbit in a mass of fatty tissue suspended in such a way that it becomes an almost perfect ball bearing. Three pairs of muscles are attached to each ball, and five of these extend backward to the rim of the conical-shaped orbit, where they are attached by tendons. (The inferior oblique is attached near the inner canthus.) The muscles attached to each eye ball at its upper most part (the superior rectus) in general turns the eye upward, while its opponent, the inferior rectus, which is attached to the lower part of the eye, just opposite the attachment of the superior rectus, tends to rotate the eye downward. It is apparent that "<u>like</u>" muscles in each eye produce the same movement, that is both superior recti working together rotate the eyes upward, and both inferior recti working together rotate the eye downward. This synchronized action of like muscles produces the first coordinate motion to which we have referred, that is, concomitant movement of the eyes in the vertical meridian.

Attached to the middle of the nasal side of each eyeball is another "straight" muscle, the medial rectus, and opposite to it on the temporal side of the eyeball, a similar muscle, the lateral rectus. It will be seen that to move the two eyes to the right, the right lateral and the left medial must contract in unison, while at the same time, as with all paired muscles, the opposite muscle of each pair must relax. (Here "<u>unlike</u>" muscles act in unison.)

If stimulus and inhibition are exactly matched, the two eyes will move through the same number of degrees, producing concomitant motion. This is evidently a more complex activity than coordinate motion in the vertical meridian where like muscles act in unison. It requires a different "brain pattern" and is definitely a later and more difficult development than the vertical movement.

If now we think of the movement called convergence, an entirely different brain pattern must be set up in which the two medial recti act together, while at the same time the two lateral recti are inhibited. Simply from an anatomical standpoint, this is a more difficult pattern to attain than the one produced by concomitant motion. We therefore expect this to develop later than the other. If you like brain teasers, try to visualize the muscular action producing convergence at a point 16 inches from the eyes and one foot to the right of straight ahead. Here we have a concomitant motion produced by the action of the right, lateral and the left medial acting together, while at the same time the two medials must act together to bring about convergence. When we consider the fact that there is also a pair of oblique muscles controlling

torsion of each eye, and that evidently all six of these muscles are coordinating at all times,in every eye movement, is it any wonder that this eye coordination does not approach perfection until the age of two years in a healthy child? This is quite naturally postponed by the toxemias of children's diseases, malnutrition, and other bodily deficiencies, not to speak of various abuses of the visual apparatus itself. The point which we as educators must keep constantly in mind is that all of these eye movements brought about by the action of muscles in the voluntary system become acquired reflexes and as such are subject to all the laws governing reflex action of whatever character. They are therefore subject to training, and in the case of malfunctioning it should be possible to devise adequate training procedures. These procedures should be not unlike in principle to those which are applied to the training of other reflexes.

But so far only the simpler stages of eye coordination have been discussed. We have considered only how those eye habits which can result in single imagery must be formed. As the demands for more accurate information increase, it becomes more and more necessary that smaller and smaller objects be clearly defined as well as perceived as single. It is common knowledge that the eye in many respects can be compared to a camera, since it contains an optical system capable of focusing images upon the retina corresponding in the camera to the sensitized plate. But anyone who has handled a camera knows that if objects are brought near to it, it is necessary to move the sensitized plate farther away from the lense to avoid a blurred image. The same situation prevails with the human eye. But since it is not possible to move the retina away from the lens by lengthening the eye ball, nature has provided another device. Part of the focusing mechanism, the crystalline lens is so controlled by a type of sphincter muscle known as the ciliary body, that the lens can be thickened or thinned, which has the effect of keeping the image clearly focused on the retina no matter whether the object of regard is at optical infinity or within the ordinary near-point range of the individual. This function is known as accommodation. Objects not in focus produce a blurred image on the retina. The sensation of blur when there is conscious desire to distinguish an object clearly becomes therefore the stimulus to accommodation. That is, the ciliary body is stimulated to act in the appropriate way to produce thickening or thinning of the lens, to bring about sharp focus. This can be accomplished by each eye separately, the other being closed or covered; but since we have both eyes it is highly desirable that the two eyes learn the habit of sharp focus in unison. For objects at infinity the process is relatively simple, but for objects at any near point, the process becomes quite complicated, owing to the fact that

convergence must be accomplished with mathematical accuracy for single imagery at the same time that accommodation must be accomplished with great accuracy for sharp focus.

During the period between the ages of two and six this new factor of accommodation is being added to the already quite complex reflex of convergence. With the desire to see smaller and smaller objects it is necessary for accommodation and convergence to be synchronized exactly. When we remember that there is required a different combination of convergence impulse and accommodative impulse for every point between optical infinity and the normal near-point of each child, and that all of these coordinations must be attained by an experiential method, it becomes apparent that a relatively long period of time must be taken for its development. In order that this highly developed relationship between accommodation and convergence should be completely automatic and effortless, great care in the hygiene of the eyes should be exercised during this period. Incorrect posture in play, improper lighting, the use of objects containing fine detail, the requirement of persistent seeing at any near-point position, should be carefully avoided. Since the age of six is approximately the time usually set apart for the acquisition of reading skills, it is highly important to know whether or not this important eye coordination has really been developed to the point where the child can safely be called upon to make use of his eye habits as an auxilliary to the habits of reading. It is altogether possible that the child is not physically ready to read. If he is not, it is only reasonable to postpone the introduction of reading until his visual habits have become more definitely fixed. The premature forcing of the child to use the eyes before they are ready, by the mother who is so sure that her child is superior to other children of the same age, is much worse than neglecting for a time optical defects which can be corrected by glasses, for the reason that the child may never recover from the premature forcing.

Another factor should be given careful consideration during the early stages of the reading process. Practically all children are far-sighted at birth. This defect decreases as the child becomes older and only a relatively small number remain so far-sighted as to demand optical attention. Since the least demand for convergence and accommodation is made at infinity, the logic of using properly made charts, reading matter projected with a good stereoptican lantern, and large and highly legible letters on a good blackboard where in all these situations the children are several feet away from the reading matter, should be perfectly apparent. It is the use of relatively small print at a near point (distance within arm's length) which produces the combination of strains accompanying the sustained attempt to converge and accomodate with proper

coordination that is likely to be the source of ocular difficulty in children. There is also much reason to believe that a tendency to nearsightedness may be encouraged by the too early and too persistent use of reading material at a near point.

This discussion has been limited pretty largely to an attempt to visualize the physiological processes which we call vision. My subject is teaching children to see. It seems to me if we have a clear conception of the developmental changes through which the child must go and the intricate reflexes which must be developed that the basis of training methods will be rather obvious. It is certainly due to every child on entering school or who is already in school, that there be some adequate means at hand by which it can be determined whether his eyes are functioning properly in terms of the normal or expected development for his particular age. If a dys-functioning is discovered it is also due to him that some competent person should take the child in effect back to the cradle, if necessary, and by controlled means and with appropiate stimli re-educate the eyes to a new and appropriate standard of efficiency. To be able to do this requires a high ability in detecting the particular anomalies which may be present. These are sometimes more difficult to detect because, in order to secure single, clear, binocular imagery, there may have been set up certain tolerances, defenses, or componsations which hide the real defect. It is only during the past few years that much attention has been given to the subject of eye reconditioning. I express it only as a personal opinion that in the near future, techiniques will be so standardized and simplified that it will be possible to make them available for all children as routine class room procedure and not as remedical exercises for the few. We are not ready for that now. But if we take the view that it is an educational process, then its administration must follow the laws of learning eye conditioning. Certainly no one is better qualified for the task than the well-trained teacher.

We learn to see in accordance with a well established psychological principle, and eyes will be re-educated when the methods pursued are in accordance with this same principle. "We tend to repeat those acts which result in a feeling of satisfaction and tend to inhibit those sensations which result in dissatisfaction or annoyance."

DISCRIMINATION IN THE USE OF RADIO AND MOTION PICTURES IN EDUCATION

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All life is a series of adjustments between the individual and his environment; and education, in its widest sense, is the process designed to facilitate the necessary adjustments. From the cradle to the grave the human being is gaining experiences which may or may not enable him to live a happier, more useful life. Every experience affects the mental make-up of the individual. Therefore it is quite important that discrimination be exercised in the selection of experience.

The swift-moving age in which we are living has materially affected the experiences gained by children. Two score years ago, the most that a child learned came from the home, the school, and the church. His experiences were limited and the acquisition of them was carefully guarded and supervised. But today children are gaining numerous experiences from the motion picture, from the radio, and from travel. These experiences come to the child in a vivid and an impressive form. Some are wholesome and altogether desirable. Others are not.

After carefully considering the vast number of facts collected by children outside of school, the teacher may conclude that the classroom should be a place given over almost exclusively to reflection and activities which will enable them to apply what they have learned -- to master and coordinate the bewildering number of experiences they are receiving from sources outside of school.

In any plan to bring about useful changes in human beings, such factors cannot be ignored. The teacher may close the school door and darken the windows to shut out impressions gained from motion pictures, radio, and travel. She may refuse to discuss them, but she cannot keep their influence out of the lives of her pupils. If she is a wise teacher, she will try to understand what influence these modern media are having upon the lives of her pupils, and how she can use these media to the advantage of her pupils.

Since children have so many more opportunities for learning now than they had two score years ago, and are not as carefully supervised, they must be taught to discern differences between the good and the bad, between the useful and the useless. Otherwise how are we to have a generation of independent thinking and right living people?

Enough words are broadcast in the United States alone each year to form a typed line extending around the earth four times at the equator. Yearly more than five hundred feature motion pictures and literally thousands of short subjects are produced in this country. Obviously only a small percentage of these is worthy of serious consideration in the education of the youth of America.

Generations ago, we learned that the water to be used by great cities should be filtered and purified before it is made availabe for

human consumption. Is it not even more important that the great rivers of potential experiences be filtered before they become a part of the average person? In totalitarian states, the dictators presume to be able to filter and purify experiences for their subjects, and decide not only what they should hear and see, but also what they should believe. If the leaders were all-wise and had the well-being of their subjects at heart, it is possible to conceive that they would do a superb job. But in a democracy where selections are made by the average person, it is essential that he be taught to compare, contrast, weigh, and judge, if he is to form the habit of properly evaluating potential experiences. The intelligent participation by each individual in the complex life today may be conducive to the development of the individual initiative and responsibility, but it presupposes that he has amassed a body of useful information and has developed a basis for judging and arriving at conclusions.

Education is not limited to schools as we have known them in the past. With the shifting social-economic basis and the accompanying insecurity and unrest, the adult is forced to adapt himself to ever-changing conditions. The average individual needs guidance and assistance to enable him to make the necessary adjustment. Therefore, I predict that within the next few years we will see adult education with its various ramifications recognized in many ways hitherto unknown. If so, every scientific aid to learning should be utilized. Among the more promising of these are the motion picture and the radio broadcasts.

Two factors are operating to hasten the admission of films and broadcasts into the field of formal education. One is the urgent need of adapting curricula to our rapidly changing social order so that schools may be free from many of the defects of the past. The other is the growing realization that every teaching economy must be utilized if the children and adults are to master and co-ordinate the essential facts and form the attitudes which will enable them to cope with the perplexing problems of modern life. It appears that as life becomes more complex the radio and the motion picture will be called upon to serve ever-expanding fields of usefulness.

Schools may lead in educational theory, but they do not lead in practice when it comes to the utilization of radio and motion pictures. Both the amusement field and the industrial field far surpass the schools in their utilization of these modern scientific aids. Perhaps it is a good thing that schools have been slow in this respect. The proper education of girls and boys is too serious an undertaking to risk the quick introduction of materials which may turn out to be a worthless fad. Potentially radio and motion pictures have great educational value, but in actual practice their value depends upon their selection and how they are used. Much still needs to be learned about the proper integration of film and radio materials into units of instruction, and the organization of units of instruction around such teaching materials.

Fortunately, many agencies are now working to solve the basic problems involved in the utilization of motion pictures and broadcasts in education. First, I would mention the Federal Government which has set up the Federal Radio Education Committee to direct studies and to promote cooperation between educators and broadcasters to the end that the air lanes will better serve education. Within the past six years, the Federal Government also has greatly expanded its motion picture and broadcasting activities. It has made some excellent documentary films and has established a United States Film Service to facilitate the utilization of governmental films. Through the Works Progress Administration, the Office of Education WPA Radio Project, which has attracted such favorable national attention, has been financed. The WPA also has financed many visual production centers throughout the country and local educational radio projects.

We should mention certain great foundations which have become quite active in this field. The General Education Board has contributed to many worthy radio and film projects through such agencies as the American Council on Education, the Federal Radio Education Committee, the Progressive Education Association, The Museum of Modern Art, and others. The Carnegie Foundation financed the National Advisory Council on Radio in Education for years, as well as a number of special studies. The Payne Fund has been vitally interested in radio and motion pictures in education for the past ten years and has financed various studies as well as the National Committee on Education by Radio. Recently the Sloan Foundation has become active in the production of motion pictures for use in economic education. The Harmon Foundation has been encouraging the use of motion pictures in religious education for a decade or more. At the present time, the Captain Allen Hancock Foundation is building a splendid building at the University of Southern California to encourage scientific research and visual education.

With the aid of foundation grants, many great universities are now carrying out research and practical experiments in the educational use of radio and motion pictures. Certain strong national organizations also are becoming actively interested in the field. Among these is the American Academy of Science which is financing the Committee on Scientific Aids to Learning.

The problems are complicated, but the potential rewards are great. Therefore, it appears that within the present generation motion pictures and broadcasts will revitalize education and attune it to our fast-changing times.

ALLERGY AND ITS RELATIONSHIP TO EDUCATION

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The word "allergy" is derived from the Greek ALLOS meaning "other" and ERGON meaning "energy." When allergy was first described by Von Pirquet it referred to the fact that if an animal or human being were injected with a foreign substance and had not previously been sensitized to that substance, the reaction would be different from that of the individual who had already come in contact with the substance. For example, an individual who has never come in contact with the tubercle bacillus, when given an injection beneath the skin of the protein of the organism, shows no reaction. On the other hand, if the patient has previously been in contact with the tubercle bacillus, he shows a welt and redness at the site of the inoculation which we use as a tuberculin test to determine whether or not the patient has had an infection.

All infectious diseases show manifestations of allergy. The fever may be due to split products set free as a result of an allergic reaction of the tissues to the foreign substances produced by the growth and resulting from the death of the bacteria causing the illness. Allergy plays an important part in enabling us to combat disease. It is a part of the mechanism which increases resistance to disease, and, as in the case of many infectious diseases, particulary those of childhood, such as measles, mumps, whooping cough, chickenpox, diphtheria, scarlet fever, and the like, is an indication of the presence of a relative immunity to second attacks.

In the commonly accepted form, allergy has been limited to refer to abnormal sensitizations which a person has developed in the normal routine of his daily life, without artificial injection. Those sensitivities which are the result of artificial injection are known as anaphylaxis. An example of the latter is the reaction shown by a patient who has had horse serum with an immunizing injection as for diphtheria, and then is required to have a second injection of horse serum, such as tetanus antitoxin. The reaction to the second injection may be very serious, though had it not been for the previous sensitising dose of diphtheria toxin anti-toxin, the tetanus antitoxin could have been given with impunity.

The usually accepted disease -- rather may I say manifestations -- considered under the term allergy, are asthma, hay fever, eczema, headaches, hives, swelling of the face, gastro-intestinal upsets, and certain types of irritation of the eyelids. Other manifestations that are considered by some as allergic are acne, bronchiectasis, arthritis, epilepsy, and some urinary complaints. On the other hand, as shown above allergic manifestations cover the entire field of medicine.

Just as the degree of anaphylaxis varies, so does the allergic response of man. One may pass under a pollenating oak tree and have the pollen shaken in his face, sneeze, and be over it. Another may come only within several feet of the tree and you have a most violent attack of sneezing to be followed by an attack of hay fever or asthma. It is this hypersensitivity of the second man that we usually think of as allergy.

How does one become sensitized? The mechanism of allergy is not fully understood. Mothers can transmit it to their children; it has a tendency to run in families. In the present discussion of allergy, I am limiting myself to facts derived from the study of a group of severely allergic individuals, analyzed from the standpoint of the physiological changes which may have had a bearing on the allergic condition. It must not be inferred that all people who present these developmental changes are allergic, nor that all allergic human beings show these particular changes.

In studying our patients, we have not confined our interest to the substances to which they are sensitive, but have directed our inquiry to why they are sensitive. Usually they come to us with long lists of things they have been avoiding. We try to build them up to make this unnecessary, though occasionally we have to eliminate some food or shield the patient from certain sensitizing substances. This is more often the case with adults, for their tissues are more fixed. But as a rule, most adults can be worked out without too much attention to sensitivities.

In our approach to allergy, every system of the body is carefully studied. Skin texture is important. The eyes, ears, nose, mouth, teeth, throat, neck, chest, abdomen, genitals, extremities, nerves, muscles, and psychological response are all considered in the complete examination. X-ray pictures are made of the skull, hands, feet, and chest. Photographs are made for comparison of growth and study of body contours, posture, and distribution of superficial tissues and appendages. Certain laboratory studies on blood, urine, and sputum are made. Each patient is given a tuberculin test and a Schick test, and a series of anthropometric measurements is made.

In order to evaluate the findings, normal standards must be set up. The skeleton of the body progresses steadily from birth to maturity. In the purely clinical side of the examination wide limits are accepted and the skill of the examiner must be relied upon in the interpretation of the findings. Certain contours of the body have become accepted as normal. These can be studied from charts and tables. Heights and weights can be compared by standard tables, as can certain of the anthropometric measurements. Diameters of shafts of bones again are open to wide interpretation, depending upon whether one is studying a husky farmer boy or a city boy or girl. However, the bone age is again a comparatively accurate science, and with the exception of differences from standards due to climatic variations, other deviations can be definitely classified as pathological.

One normal circumstance has been recognized through the generations of man. Equally healthy boys and girls mature at different rates. At 17, a girl should reach physical maturity, while a boy continues maturing until 20 years. This unequal development is true even in the early years, for developmentally a 5½ year old girl is about equal to a 6 year old boy, and by the tenth year the girl is a full year ahead of the boy. How frequently this unrecognized fact of maturation by parents and educators throws a psychological handicap that is very difficult to overcome into the path of a sensitive boy who finds his younger sister approaching or excelling him!

I shall classify the allergic individuals I present into two general groups, the tense and the relaxed, both apparently having in common deficient skeletal development, poor musculature, and disturbed physiology as well as psychology. In order to illustrate best how an understanding of the physiology of these children can be of material assistance to those who are confronted with the problem of educating them, I have chosen severe, but by no means extreme, examples of allergic children from those who have come under my observation. In the tense group there is one child of elementary school age and one of high school age; the same obtains in the relaxed group.

Let us begin by examining the general characteristics of an individual in the tense group. His skeleton is small in diameter, and though it may be short at first, it tends to grow too tall, with a preponderance of growth in the extremities rather than in the trunk. Though the bone age appears normal in infancy, there is often a delay, as the child grows older, in the closure of the growing portions at the ends of the bones. Sometimes this closure fails to occur for years after the normal period. Such an individual may continue to gain in height until 25 years, a function supposed to stop at 16 years in girls, and 19 years in boys. Accompanying the failure of the closure of the epiphyses is a tendency for the individual to fail to mature emotionally. There is also a tendency for the face to be narrow and long, and the roof of the mouth high. The teeth frequently are poorly calcified and crowded. Muscles tend to be weak, strong only for flash effort. Though oftentimes a person of this type seems to have good muscle build, he is generally very low in endurance. He suffers from poor circulation. Mental effort of high order is difficult to sustain. At first, it is hard to understand why this apparently keen individual cannot compete, but when one locks at his X-ray pictures, he is astonished to see what small bones there are in the legs, arms, and ribs, and what a small heart shadow. A child of this type is one we used to say grew too fast. A girl of this type is frequently prone to menstrual difficulties.

When individuals of this type are studied by endocrinologists in later life from a developmental standpoint, they are frequently classified as hyposexual individuals of the undernourished type.

The child of the relaxed type is quite different. He tends to keep the early childhood shape late in life. The preponderance of his growth is in bodily circumferances. A history or other evidence of thyroid disturbance in the mother is obtained in a large number of cases. His bones may be smaller than normal in diameter, but their tendency is to be of a fair size, though soft, poorly calcified, with large rachitic joints, large bulging frontal bones, deformed chest, early bowed legs which may later become knock-kneed. His tonsils are often large, causing mouth breathing; the roof of his mouth is low, the upper teeth are better spaced than the lower teeth which are usually small and crowded, with a tendency to a retraction of the chin. This child is frequently delayed in bone age. He tends to be fat and is more prone to heart trouble than is the child of the tense type. The musculature at first glance may appear excellent, but on examination is found to be only flabby tissue. The appetite is usually good, particularly for sweets. Non-descent of the testes is frequent in the younger boys, and hypogenital symptoms of the fat type are common in the adult.

Delayed mental development is frequently found in this group, and when of moderate retardation, is often looked upon by the educator as mere laziness or unwillingness on the part of the child. There is also a tendency toward delayed emotional development. Individuals of this type are usually jolly in disposition and have the faculty of "getting by". Excessive menstruation in the girls and women of this group is common. Their muscular efforts though less energetic than those of the tense type, may be more sustained. In later life, endocrinologists are likely to classify these individuals as hyposexual persons of the fat type.

Let us consider a specific example of the child of the tense type. He has severe asthma; age 8, weight 42 pounds, height, 47 inches; (optimal height for age 8, 49 inches, optimal weight, 49 pounds). His flash intelligence is advanced for his years. At school, he grasps quickly, is able to pass his grade, even though he may miss as much as one half his time due to allergic attacks. He is a "Problem child"; after 10 to 15 minutes on a subject, he is tired, his interest lags, and he is up to mischief. The report card says "poor deportment, inattentive, lacks social adjustment, does not do what he is capable of doing".

What about his physical make-up? Our standard tables show us that his weight, 42 pounds, is optimal weight for a child slightly under 5 years, and that a child of 5 years should be about 41 inches tall. But our patient is 6 inches taller. When we examine him by X-ray, we find very small bones and small muscles. His hand, according to the standards of Todd, the anatomist shows a maturation of 7 years. His arms and legs are very long and so are his hands and feet. but his body is as short as that of a five year old child.

Now from the simple principle of the lever, the longer the lever of the type of our arms and legs, the greater the mechanical advantage for speed and the less for power. Here we have a boy with a calendar age and height of an 8 year old, but with the weight of a 5 year old; judging from the size of muscle bundles, less than one should find on a well developed 4 year old. Why can he not keep up in physical activities with 8 year old children? Why can he not maintain effort? First, his muscles are far too small for his body, and second, these muscles, because of their size, cannot maintain prolonged exertion. Further, this child is driven by a hyperactive psychomotor mechanism continually to exhaust himself. His allergic paroxysms are his means of relief from overactivity, and are an expression of exhaustion.

Now let us consider a similar boy finishing high school: age 16 years, 10 months; height, 69 inches; weight, 94 pounds. Our standards show for a boy this age of optimal development a height of 64 inches, and a weight of 109 pounds. The optimal height for his weight would be 61 inches: Comparing his bone age with the tables, he has a bone age maturity of 14 years. He is already taller than optimal man at 20. According to his history, he was like the previous child discussed, always underweight and slightly under height, until at 13 he began to grow rapidly. His education record has been similar, out of school a third to a half of the time; high flash intellectual attainment; over-serious, eager to take on all the extras possible. However, we find again the incongruity of physical factors.

Here is a boy who should weigh, for best development for his height, 141 pounds, whereas his weight is that of a normal boy 8 inches shorter, with a maturity equivalent to his weight, namely, 14 years. He is the type of boy who does not act his years, because emotionally he is not maturing at the rate of his calendar years. In fact, as we follow boys of this type through to adult life, it is not uncommon to find failure of closure of the bones of the wrist, which should be completely closed by 18½ years, until as late as 25 to 35 years. Such individuals are still emotionally immature and remain through life sociologic problems. Though they may perform a definite service to society, they may commit acts, because of their immature power of reasoning, that are a-social.

I shall now describe specific examples of the relaxed type. First, there is the asthmatic child, age 6, weight 54 pounds, height 46¾ inches, which is just about right for his age. The osseous development of his hand, however, is but that of a three year old boy. His bones are larger in diameter than those of the skinny, tense type, but his muscles are small, in spite of an apparent good flesh. Over his arms we find fat to the extent of almost ½ inch, which reduces the diameter available for muscles by one inch; he really has abnormally small muscles. He is knock-kneed now, though earlier, he was bow-legged. His forehead is prominent; his joints are large; he has a flare of his ribs and beading common in rickets. The arch of his jaw is narrower than

his upper arch; his lower teeth are very small and soft. He is myopic and shows derragraphia. His mental age is but that of his bone age, namely three years. His mother shows evidence of thyroid disturbance.

Let us study another child of this group, age 15, who does not show the marked mental retardation, who is good natured, fat, and considered a little lazy. His school work is not bothering him half as much as it does his teachers or family whose anxiety merely bores him. His weight is 154, height, 67½ inches. His complaints are "asthma and a failure to reach puberty". Optimal height for his age is 62 inches, best weight, 99 pounds. As you see, he is 5½ inches too tall, and 54 pounds too heavy. The best height for his weight and years would be 71 inches, and the best weight for height, 129 pounds.

Here is a boy who exceeds in all dimensions. Puberty, another sign of maturity, is delayed at least two years. The X-ray of his hand is like that of an 11 or 12 year old rather than that of a boy his age. Though his feet and hands are long, and he is apparently well developed, we find very thick pads of fat covering his entire body so that what seems to be a good muscle mass is only very soft flesh. The coach wants him to play football because of his weight and build, and when the boy is disinclined to play, he is pronounced lazy. The boy, however, tells another story: "I haven't the pep; I am tired quickly, and when I go to bed at night, I have an attack of asthma." This boy should not play football for more than one reason: he is immature; his muscles are too small for maintaining him in a prolonged game. Most boys his age should not play football. The closure of the long bones has not yet taken place, and any injury to knee or hip joint may result in a permanent deformity. An occasional boy of this age has an advanced development which would make it safe for him to play football, but he is the rare exception.

In the educational program, boys and girls should be grouped only according to developmental age. Exercise and sports should be arranged according to the fundamental strength of a child's tissues.

Of the many theories advanced for the cause of allergy, my experimental work, analysis of clinical histories, and clinical observations incline me to look upon allergy as a deficiency disease. This deficiency is not merely the result of what has happened to the individual during his extra-uterine life, but what may have happened to him in utero, or to his progenitors one or two or even more generations removed.

The vitality of the foods consumed by the progenitors of an individual makes a tremendous contribution to his health and development. Not the least important is the vitality and completeness of the dietary during the nursing period.

That the breast milk of the mother who gives birth to the baby is of utmost importance to the health and strength of the growing infant was recognized in ancient Rome, where the practice of wet nursing was almost universal during the deline of the Empire. It is enlightening to quote from Aulus Gellius who wrote a treatise entitled "Attic Nights" in 150 A. D. He and the philosopher Favorinus went to congratulate the father of a new born son;

> "Of course," said he, " she will suckle the child herself." And when the girl's mother said that her daughter must be spared, and nurses obtained in order that the heavy strain of nursing the child should not be added to what she had already gone through, "I beg of you, dear lady," said he, "to allow her to be a whole mother to her child. Is it not against Nature, and being only half a mother, to give birth to a child, and then at once send him away? To have nourished with her own blood and in her own body a something that she had never seen, and then to refuse it her own milk, now that she sees it living, a human being, demanding a mother's care? Or are you one of those who think that Nature gave a woman breasts, not that she might feed her children, but as pretty lettle hillocks to give her bust a pleasing contour? Many, indeed, of our present-day ladies--whom you are far from resembling--do try to dry up and repress the sacred fount of the body, the nourisher of the human race, even at the risk they run of turning back and corrupting their milk, lest it should take off from the charm of their beauty. A child's thoughts, and the love he is every ready to give, are occupied with her alone from whom he derives his food."

This quotation lends credence to the belief of the historians who advance the hypothesis that one of the underlying causes of the fall of the Roman Empire was the unwillingness of her women to nurse their young. Think of the implication in this modern day where a majority of the newborn babies are fed on synthetic formulae, heat processed cows' milk devoid of important factors which are readily destroyed by heat and oxydation. Think of the alarming situation when many mothers who would prefer to nurse their babies are physically unable to do so, which is prima facie evidence of the greatest deficiency in the mother, and which stands a very high chance of being transmitted to her off-spring.

What can the educator contribute to correct the rapidly increasing tendency to allergy among children? He can disseminate information as to the importance of vital foods in maintaining the optimum health of our race. He will interpret "vital" to mean foods from healthy animals, or foods grown on soil suitable for producing seed quality crops. He will know that with all the miracles performed by the chemist and processor, that they will never, by artificial means, furnish us with foods of sufficient vitality to maintain us in optimum health. It is only healthy plants and animals that can perform this service for us.

The educator can also teach biological facts to the maturing young men and women students, impressing them with the serious need to understand that the kind of motherhood which will maintain a strong race is that which has healthy mothers capable of nursing their infants.

The immediate problem of the educator is to understand how to manage successfully the allergic children now in the schools. This will require an adjustment of the educational program to the physical and mental limitations of this group of children.

IMPLEMENTING the CURRICULUM with AUDIO-VISUAL AIDS

Mrs. Ruth Reed General Supervisor,
San Bernardino County Schools

The philosophy of the modern school is based on the premise that learning is an active process and takes place as the individual comes in contact with his environment. This interaction between the learner and his environment challenges him to action and produces a change in him which is commonly referred to as learning. Thus the curriculum of the elementary school becomes a series of real experiences rich with opportunities for children to live happily and successfully and to solve problems which are real to them here and now. The acceptance of this point of view entails a heavy responsibility on the teacher who must provide such an environment for her group. Teaching becomes more interesting and certainly more challenging as the teacher transfers her attention from subject matter set out to be learned to a program which provides for the needs and desires of her group.

Our problem at the present time is to devise ways and means of helping the teacher to implement the curriculum by the use of audio and visual aids. We would no doubt all agree that first hand information obtained by an excursion is invaluable to the child, but in remote areas distance and expense are factors which the teacher must consider. It may not be advisable to take the children of a desert school on a hundred mile trip to see harbor life or a California mission, but teaching aids can be brought to the class room that will make those particular experiences more meaningful. As teachers plan their units they are on the lookout at all times for art objects, pictures, models, things characteristic of a particular people, etc., that will enrich and enlarge the child's experience in the particular area in which they are working. Many schools have found it advisable to start a museum where collections can be kept. Parents are often glad to donate objects from various trips they have taken, such as dolls dressed in authentic costume of the country, tapestry, shawls, musical instruments, and many other souvenirs characteristic of a people or country. Some schools have started a museum with collections from their own vicinity as rocks, insects, butterflies, wildflowers, sea life etc. Much material can be obtained through an exchange arrangement with schools of other states or in different parts of our own state. The Junior Red Cross has done much to further this type of work.

The school museum may serve as a housing place for the models that are made by the various children. In our unit of work program it is often advantageous for a child to make a model according to scale of some particular boat, castle, airplane. Teachers are often at a loss as to what to do with these models after they are completed and have served their purpose. The school museum not only serves as an excellent storing place but also as an added impetus for the child to do a really good piece of work.

Good teachers have for some time kept picture files in some form or other. Some have kept the pictures in a treasure chest which is kept in the classroom for the children to use. The material is catalogued according to topics as art, playhouse, trees etc. When children have an opportunity to use this material they soon learn how to use a file. They must know the alphabet and how to use the topical guide. During the past year a W. P. A. cultural project has greatly aided the rural schools in San Bernardino County in building up this file of material. The teachers had magazine drives to get some of the source material. The magazines were sent to a central office where skilled workmen assembled the material in a most usable form. Other workers set up the file which was to go to the school in a complete form. The materials listed in the new Miller list were sent for by the supervisor of this project. Great care was taken in writing these letters and later letters were written acknowledging the material received. During the summer these files are being revised and new material is placed in them as it is collected. Teachers are very enthusiastic over the help they receive as they use these files, and the total cost to the school district is less than seventy-five dollars.

The use of the motion picture as a means of implementing the curriculum will no doubt be duscussed by another speaker. There is certainly a decided advantage in motion pictures, but the cost involved often makes the machine out of reach of the rural school. Considerable help should be given to those schools which already own picture machines in order to get the most out of them. The film frequently arrives too late for the group that requested it and when it is shown it is for general amusement rather than as a teaching aid.

Principals of larger schools very often take movies of activities in progress and later the film is shown to the group. Many points are discussed in the evaluation period that may help considerably in clarifying certain learnings and make the experiences more meaningful. This type of film is invaluable as it is shown to the parent groups in interpreting the school to the community.

The radio is almost indispensable in our modern classroom. Is it not surprising that we in education who are always so quick to pick up the latest phraseology, the newest fad in classroom seating and lighting, have been so slow in using this device as a helpful teaching implementation? Boys and girls listen enthusiastically to their favorite program during their after school time, but have you ever observed a teacher preparing her group for one of the standard broadcasts? We should bow our heads in disgrace at the system of teacher training that has given our teachers so little background in music that it is not possible for them to guide others in this field.

The radio is not only implementing the curriculum but the outside world is brought into the confines of the classroom. The rural children get something the teacher cannot give, talks by

famous people, world events dramatized before their eyes and presented so realistically that the child almost feels that he has experienced the event first hand.

In schools where it is not possible to have a radio it is always possible to have a phonograph. The life of a people can be better understood through their music. Phonographs can be obtained simply through an advertisement in a local paper. Many people are glad to donate costly records if the schools make their wants known to the public.

In the short time alloted to me for this topic I have only scratched the surface of this very broad field. It is really a whole summer session course. In closing I would like to leave this thought with you that the teacher in the modern elementary school is in a most challenging situation. Teaching is no longer a hum drum affair but is truly creative. The entire field of audio-visual aid is at our disposal. We have but to make use of our opportunities.

ADMINISTRATIVE PROBLEMS WITH REMEDIAL READING

T. Stanley Warburton, Coordinator of Secondary Curiculum
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My responsibility is to present some administrative problems with remedial reading. It is relatively easy to present the problems, for they are many and obvious. But to indicate what steps should be taken toward the alleviation of these problems is much more difficult. To make this discussion as practical as possible, I shall list questions most frequently raised by school administrators when remedial reading is considered. Answers will be categorical inevitably because of the restricted time. At the outset, it is important to bear in mind that each school represents an individual problem, that there is no royal road to the happy hunting ground where every student reads perfectly, and that I am deeply indebted to literally hundreds of workers in this field on whose studies I am drawing in attempting to answer these questions.

1. How much does a remedial reading program cost?

The question of cost is, naturally enough, one of the first raised by many administrators. In dollars and cents, the cost of a remedial reading program is modest. Instructional cost is the chief item. Usually this can be materially lessened by utilizing the services of teachers already employed, rearranging schedules so that a teacher may be freed to meet with small groups of students in need of remedial instruction. If teaching loads are already heavy or if schedules are rigid, it may be necessary to employ additional help. Schools large enough to employ a full-time worker in the field of reading instruction frequently find that the decrease in expenditures for failing students offsets the additional expense for instruction. Supervision may be assumed by the principal or some other officer in the school. Special supervisors of reading in city or county school systems serve to coordinate efforts of individual teachers. When the cost for this service is apportioned among the schools served, it is usually not excessive. Materials are no more expensive than adequate text, reference and supplementary books.

Expensive mechanical equipment may prove helpful, if there is someone available to use it. The Betts Telebinocular is a welcome addition to supplement Snellen chart tests in locating students handicapped by visual defects. The Opthalmograph for photographing eye-movements and the Metronoscope, designed to train fixation habits, are useful instruments, but excellent programs have been undertaken where none of this equipment was available. As suggested regarding supervision, it is frequently possible and desirable for a group of schools to obtain this type of equipment and use it jointly with relatively minor expenditure to all.

The cost of tests is far from prohibitive. A general survey test of reading ability can be given anually for six cents a student. Such a test is valuable in determining students who need special instruction as well as in enabling a principal to evaluate to some extent the effectiveness of reading instruction within his school. Counselors can also utilize results of reading tests in educational guidance, for the predictive value for future educational and vocational success of the good reading test is relatively high. The budget should contain funds for further diagnostic and achievement tests of students who are actually receiving remedial instruction. In brief, then, cost is a small item in remedial reading instruction, comparing favorably with the cost of other classes of comparable size. Returns in terms of student improvement with a sound remedial program far outweigh monetary considerations.

2. How can a remedial reading program be established?

Another question frequently raised by the administrator is: How can a remedial reading program be established? The answer is that the administrator must be convinced of the need for a program before it can be undertaken. Establishment of new classes means upsetting the schedule, a disquieting thing to do in most schools. Eagerness on the part of teachers to participate in such a program is an incentive to any administrator, and an essential if the program is to succeed. Parents and students should be informed and sympathetic toward the new developement. Ultimate responsibility for initiating a remedial reading class rests squarely with the administrator.

3. How can administrators and teachers be acquainted with the need for organization of remedial reading programs?

One effective method to indicate the need of reading instruction is to give a general test of reading ability throughout a school system. Tabulation of results on the basis of grade norms for each student and for each class should be made and brought to the attention of each teacher. Such a procedure is objective; frequently it is startling. It calls no one names; it deals with specific individuals within one's own school; it makes obvious the need of definite instruction.

4. What are good tests to use in initiating such a project?

The Iowa Silent Reading Test (World Book Company) is one of the most satisfactory tests, for it permits a greater analysis of results than do many of the other tests. The elementary form is suitable for upper grades and retarded secondary classes. In grades ten and above the advanced form is usually preferable. A few of the other good tests available are:

Gates Silent Reading Tests for Grades 3-8 (Teachers College, Columbia University)
Gray Oral Reading Paragraph Test (Public School Publishing Co.)
Metropolital Achievement Tests (World Book Company)

New Stanford Reading Tests (World Book Company)
Nelson-Denny Reading Tests (Houghton Mifflin)
Progressive Reading Tests (Southern California School Book Depository)
Sangren-Woody Reading Tests (World Book Company)
Traxler Silent Reading Tests (Public School Publishing Co.)
Unit Scales of Attainment in Reading (Educational Test Bureau)

Many teachers prepare excellent tests of their own for instructional purposes. There are advantages in the use of a standardized test for survey purposes.

5. What are the limitations of results of standardized reading tests?

Existing reading tests are so specifically constructed around an extremely narrow concept of reading that they are not adequate to measure many of the most important phases of reading ability. Furthermore, the attitude of a student in taking a test, especially a test of reading speed, may materially influence the score. Physical and emotional condition of students also makes for occasional marked unreliability of group tests.

6. How may limitations of standardized reading tests be minimized?

Teachers can and should provide valuable judgments that may confirm or overrule test results. No attempt to be scientific and objective should be allowed to becloud the fundamental principle that teachers should be intimately acquainted with the varying abilities of their students. The fact that no reading tests are available to measure many of the more subtle aspects of reading further emphasizes the need for adequate information by the teacher and refined judgment.

7. How may students be selected for remedial instruction?

When teacher judgment agrees with test results to indicate a markedly lesser performance in reading ability than expected considering chronological age, mental age, and grade placement, an investigation should be made of the desirability of providing remedial instruction to the student. Reliability of group tests is not high enough to warrant indiscriminate use of achievement quotients determined by dividing reading age by mental age for selecting pupils. Such a comparison is suggestive of students needing attention, and frequently is most useful in detecting pupils of superior mental ability who are not reading at capacity. The amount of reading ability required in the usual group intelligence test is a constant source of error in this procedure, because a student who has deficient reading ability is frequently underrated on intelligence tests. Individual and non-language intelligence tests assist somewhat in determining potential abilities of these students. Collective teacher judgment constitutes the best single item for selection of pupils for remedial instruction.

8. What information should be available regarding students who are to receive remedial reading instruction?

The more nearly complete the information provided to the teacher who is to give remedial instruction, the more efficient the instruction can be. The growing use of cumulative records is a real assistance to remedial teachers. Some schools require regular teachers to complete informational forms regarding students who are to receive remedial instruction. One such form is included here as an illustration.* This has the advantage of suggesting clues that may be useful in discovering basic reading deficiencies. The fact that these records, at best, are compiled by teachers who have failed to achieve desired progress from the student is an indication that they do not often hold the answer. They are frequently most useful in revealing the attitude and method used by previous teachers.

At least the following items should be provided for teachers who are to do remedial work.

a. School history, including test results, marks, and attendance record
b. Personal and social history
c. Health history and present status, including provisions for further examination of vision, hearing, and general condition as needed or requested by the teacher
d. Tests for further diagnosis of reading achievement and mental ability

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*See page 3a

RECOMMENDATION FOR REMEDIAL INSTRUCTION* (3a)

(Teachers are requested to fill in this form as completely as possible to assist in effective adjustment of remedial cases.)

Name_____Teacher_____
Birth date_____Date of Report_____
Grade placement_____I.Q._____Grades skipped_____Repeated_____
Language in home_____Approximate reading grade level_____

I. Subject Matter Adjustment
- A. Needs special help in:
- B. Has been studying:
  1. Textbook_____Pages_____2. Units of Work_____
- C. Reasons for reporting case:
- D. Desired information to be gained before returning to regular classes:
- E. Desired skills to be developed:

II. School Adjustment
- A. Description of personality, including peculiarities:
- B. Classroom behavior:
- C. School ground behavior (games, companions, etc.)
- D. Reaction to: discipline
  praise
  failure
  criticism
- E. Kinds of treatment to be avoided:
- F. Kinds of treatment most effective:
- G. School achievement in relation to ability:
- H. Pupil in generally:
  Happy_____Yes__No_____
  Popular with other pupils_____
  Cooperative_____
  Indifferent_____
  Seclusive_____
- I. Pupil participates in school games or class activities:
  Leader_____
  Participant_____
  Passive_____
  Avoids_____
- J. Probable college preparatory student:

III. Home Adjustment (comments):

IV. Physical
- A. Strengths:
- B. Weaknesses:

V. Special Interests or Hobbies

VI. Remarks:

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*This form was prepared for use in the schools of Contra Costa County by members of the Office of the County Superintendent of Schools, Martinez, California. It may be used by anyone caring to do so.

9. What special materials should be provided for use in improving reading ability?

The past few years have witnessed the introduction of a new type of material designed expressly to aid students in improving reading ability. Ingenious teachers continue to develop much of their own, but some of the following books will serve to lessen the time required by teachers to prepare individualized assignments and enable any school to offer a balanced type of practice. Some of the more helpful materials follows:

Bossey, Mabel A. and Coffin, Isabelle P. Reading for Understanding. N. Y., Appleton-Century, 1936.
Broening, Angela Marie, Reading for Skill. N. Y., Noble Noble, 1936
Cage, Mabel V. Reading in High Gear. N. Y., Harper, 1938.
Cole, Luella. A Manual of Reading Exercises for College Freshmen. Columbus, Ohio., Ohio State University Press, 1923
Gates, Arthur I. and Peardon, Celeste C. Practice Exercises in Reading. N. Y., Teachers College, Columbia Univ., 1930
Heffernan, Helen and Richards, Irmagarde. Desert Treasure; a Story of Adventure and the Mojave Desert, its People, Plants and Animals. San Francisco, Harr Wagner, 1939.
Hovious, Carol. Following Printed Trails. Boston, Heath, 1936.
Hovious, Carol. Flying the Printways, Experience Through Reading. Boston, Heath, 1938.
Knight, P. E. and Traxler, A. E. Read and Comprehend. Boston, Little, Brown, 1937.
McCall, William A.; Cook, Luella B.; and Norvell, George W. Experiments in Reading. N. Y., Harcourt, Brace, 1934.
Mack, Reba G.; McCall, W. A.; and Almack, J. C. Roads to Reading. N. Y., Harcourt, Brace, 1937.
Pitkin, Walter B.; Newton, Harold C.; and Langham, Olive P. Learning How to Learn. N. Y., McGraw-Hill, 1935.
Roberts, Holland D. and Rand, H. M. Let's Read. N. Y., Holt, 1937.
Shipley, A. H. An Elementary Remedial Reader. Fresno, Calif., C.W. Edwards, 1936
Strang, Ruth et al. Study Type of Reading Exercises. N. Y., Teachers College, Columbia Univ., 1935.
Wilkinson, Helen S. and Brown, Bertha D. Improving Your Reading. N. Y., Noble & Noble, 1938.
Wilkinson, Mary S.; Broening, Angela M.; Law, Frederick H.; and Ziegler, Caroline L. Reading for Skill. N.Y. Noble & Noble, 1936.
Wrenn, C. Gilbert and Cole, Luella W. How to Read Rapidly and Well. Stanford Univ. Press, 1935.
Yoakham, Gerald A.; Bagley, William C.; and Knowlton, Phillip A. Reading to Learn. N. Y., Macmillan, 1935.

In addition to these books for the students to read, there are some sources that assist teachers in providing suitable reading to students. The American Library Association and the National Association of Teachers and English both have book lists prepared for this purpose. The Lorerenz list of books evaluated as to their difficulty is a valuable reference. Thorndike's Word Book and vocabulary counts sponsored by Luella Cole are useful checking references in considering vocabulary. The considerate administrator realizes the difficulty of providing materials that will produce maximum growth in remedial classes, and permits the teacher a good deal of freedom and some financial support to select appropriate books, periodicals, and newspapers for given students.

10. Who should teach the remedial reading class?

In elementary schools, the teacher who is closest to the students and most resourceful in adapting teaching methods to the problems of individual children is usually most successful. In secondary schools, a member of the English department is most frequently assigned this responsibility. This should not preclude the active cooperation of all teachers in all departments in improving reading ability. If supervised study is more than a popular term, this is already happening and needs only greater emphasis and clearer understanding of what is expected of each teacher. The trend toward institutional reading programs rather than remedial classes is encouraging. The concept of developmental rather than remedial reading is closely related to this trend.

Teachers find more and more colleges which offer instruction in remedial reading procedures. This reduces somewhat the uncertainty with which so many teachers approach their first assignment to a remedial reading class. Secondary administrators still report that some of their most successful teachers in this field are those who have had the experience of teaching in the elementary grades. Familiarity with simple reading materials and practice in grouping students for required instruction may account for this condition.

11. Should the remedial reading class be given credit?

Yes, remedial reading classes should meet regularly during school time and yield credit. In secondary school, this class should meet English requirements, and should make available instruction adapted to the needs of individual students. The aim should be to return students to regular courses as soon as possible with improved reading ability and a minimum of difficulty in adjusting to the regular program. The remedial class is intent upon working itself out of a job at the first opportunity.

12. How may the stigma that frequently attaches to the remedial classes be minimized?

The clever administrator and teaching staff make membership in remedial classes a privilege to be sought rather than an irksome task. To this end, it is important that enrollment be voluntary

rather than required. If the teacher cannot convince the student that it would be to his advantage to take special work, it is doubtful that he would gain significantly from being required to take it. This does not imply a passive attitude on the part of the teacher in the face of demonstratable need, but rather one of leading a child and frequently his parents to make a wise decision. Even young students profit from objective evidence of their disabilities, and derive genuine satisfaction from seeing records of their progress. It is preferable to call the class "Reading" in the elementary school and "English" in the high school rather than "Remedial Reading," for students are loath to acknowledge that they are taking special work and nothing is gained by increasing the difference in terminology between these and regular classes. Nothing will do more to lower the prestige of remedial classes than the inclusion of a large percentage of students of restricted mental ability. Many of these students need simplified reading materials rather than remedial work, and their presence in remedial classes helps them little and may destroy the morale of the more capable students. Wise choice of attractive reading material is also essential. The skill of students in detecting easier reading materials and the humiliation that fellow students often heap upon a person they discover reading a book obviously below grade level is a source of embarrassment that should be assiduously avoided. Publishers are aiding in this area by omitting grade demarcations from current books.

13. What type of room is most conducive to improvement?

Physical conditions in the remedial reading class can assist in removing stigma as well as playing a positive part in the improvement of reading habits. The room should be as attractive as possible; frequently students participate in arranging and decorating it to make it pleasant for their use. It should be light and well-ventilated. Sources of illumination should conform to standards for position and adequacy. Bookshelves for the class library should be available. The room should be large enough so that the teacher may hear one student or small groups of students read without disturbing the work of the others. Furniture should be comfortable and adjusted to the child so that good posture and reading position can readily be maintained. The fact that remedial classes are usually limited to twenty or fewer students is no excuse for assigning them to an old office or to "that room under the stairs that no one uses any more." Because students in remedial classes frequently have had such unfortunate experiences with reading, it is important to have the room and all physical facilities the best possible so that more favorable conditioning can take place.

14. How may librarians implement the remedial reading program?

The school that is fortunate enough to have a good librarian knows how invaluable her services are in providing the right book for the right child or an appropriate seclection of books for a

class of children. To know the world of books is a specialized task beyond the usual teacher. Librarians assist immeasurably in filling this lack. Since students do not consider librarians as teachers, the librarian is often in a position to give guidance or make suggestions that students would be less likely to accept from teachers. The librarian may also function to coordinate the reading experiences of children in different grades and classes, thus preventing needless repetition or the overlooking of valuable and appropriate materials.

15. How can students help in the remedial reading program?

This is a good question, even though the average administrator rarely raises it. The usual assumption is that the students have failed and something else must be done to and for them in order to correct the situation. The fact is that little good comes except through the individual work of the pupil. With individualized instruction, even in small groups of twenty or less students, it is obvious that the teacher cannot help each person all the time. This suggests the practice of pairing students to help one another in checking exercises, taking speed tests, hearing oral reading, and watching reading posture. This cooperation is valuable in that it frees the teacher from some routine to give attention to individual problems and also encourages the students because they actually are responsible for part of the learning process. Students can prepare files of periodical materials that they found helpful in developing their reading. Comprehension and speed tests my be filed with these for the use of future groups. Student annotated bibliographies of books that were enjoyed become increasingly valuable after several groups have added to and refined them. All this material has the sanction of "student-made goods" and is consequently more palatable and often more intelligible to many of the students.

The scoring of tests is an excellent project for advanced office practice classes or other secretarial groups. If materials are kept confidential and competent supervision is provided, results are beneficial to the students participating and the teacher who is relieved of part of her load. Similarly, art classes can assist in the preparation of charts and illustrative materials. The use of commercial departments for mimeographing tests and exercises is too common to warrant more than mention.

16. When should a remedial reading program begin?

Ideally, adequate readiness, developmental, and preventive reading programs would make unnecessary any remedial work. Practically, remedial instruction should begin as soon as there is evidence of deficiency which is usually the first grade. Small groups within the regular class will normally suffice for the lower and middle elementary grades. The seventh grade seems to be the critical point today in reading instruction, for here reading becomes an incidental rather than an end of instruction. This

suggests the desirability of the increasingly common practice of grouping the most needy students for special reading instruction in junior and senior high school grades. Many colleges have found that the investment of school funds and student time in efforts to improve reading of college students has been profitable. It is never too late to start this instruction. Started early enough and pursued steadily, however, it should be possible to eliminate the need for remedial reading classes *per se* in senior high schools and colleges. This does not mean that many aspects of reading should not be taught much more thoroughly in advanced institutions than is now the case.

17. What can an administrator expect of an effective remedial reading program?

One of the first and most important outcomes of a remedial reading program is the focusing of attention by teachers and students upon the problem of reading. It is easy to take a thing as common as reading too much for granted. The impetus that comes from a thorough investigation of the status of reading in a school is often a healthy one.

Individual students make marked improvement when their attention is called to disabilities and corrections are suggested. A material lessening of the incidence of serious reading deficiencies is reported in many statements regarding successful programs.

Improved reading leads directly to a reduced percentage of failures, especially in academic courses. There is frequently evidence of an attendant reduction in the percentage of students withdrawing from schools. Usually this is brought about more by educating the teachers to the unreasonableness of former assignments and materials than by improvement of the ability of students to the point where they could succeed under traditional academic instruction.

Success in college sometimes shows an increase that can be partially assigned to increased speed and improved comprehension resulting from effective instruction. Directed reading occasionally opens the doors of the world of books to a student who previously had no interest in such things. Probably most gratifying to the administrator and teacher is the subjective reaction of appreciation from a student who feels he can again compete on an equal basis with his peers in a process that contemporary society holds of great value.

18. What should not be expected of a remedial reading program?

There is nothing magic about the best remedial reading programs. Occasionally stubborn cases of reading disability will defy the efforts of the finest teacher. Physical and emotional complications make this an extremely difficult task at best.

No administrator should expect all students and parents to understand that the remedial program is desirable for their children. In the abstract, agreement to the principles involved is readily obtainable, but the belief that "my child" is different is widespread. Teachers are often loath to cooperate because of the extra work entailed in testing, providing required information, and adjusting programs to accomodate remedial instruction. Some taxpayers, not without point, question the inclusion in the secondary schools of an elementary subject.

It is folly to think that a remedial reading program will solve the problem of the low ability student, for many of them are reading at or above their restricted capacity. Remedial reading is no substitute for current modifications in elementary and secondary programs and teaching methods designed to adapt the public school system to meet the widely varying needs of all types of students.

19. Where can administrators and teachers turn for specific information regarding remedial reading classes?

The following is a brief list of recent and practical books concerned with the problem of improving reading ability.

Anderson, C. J. and Davidson, I. Reading Objectives. Chicago, Laurel Book Co., 1935.
Baker, Harry J. In Behalf of Non-Readers. Bloomington, Ill., Public School Pub. Co., 1934.
Betts, Emmett A. The Prevention and Correction of Reading Difficulties. Evanston, Ill., Row, Peterson, 1936.
Center, Stella S. and Persons, Gladys L. Teaching High School Students to Read. N. Y., Appleton-Century, 1937.
Cole, Luella. The Improvement of Reading. N. Y., Farrar & Rinehard, 1938.
Dolch, Edward W. The Psychology and Teaching of Reading. Boston, Ginn, 1931.
Gates, Arthur I. Reading for Public School Administrators. N. Y., Teachers College, Columbia Univ., 1931.
Gates, Arthur I. The Improvement of Reading. N. Y., Macmillan, 1935. (revised)
Gray, William S. What Makes a Book Readable? Chicago, Univ. of Chicago Press, 1935.
Harrison, M. Lucille. Reading Readiness. Boston, Houghton-Mifflin, 1936.
Hatfield, Wilbur L. An Experience Curriculum in English. N. Y., Appleton-Century, 1935.
Headley, Leal A. Making the Most of Books. Chicago, American Library Association, 1932.
Huse, Howard R. The Illiteracy of the Literate. N. Y., Appleton-Century, 1933.
McCallister, James M. Remedial and Corrective Instruction in Reading. N. Y., Appleton-Century, 1936.

McKee, Paul. Reading and Literature in the Elementary School. Boston, Houghton-Mifflin, 1934.
Monroe, Marion. Children Who Cannot Read. Chicago: Univ. of Chicago Press, 1932.
Monroe, Marion and Backus, Bertie. Remedial Reading. Boston, Houghton-Mifflin, 1937.
National Society for the Study of Education.
Report of the National Committee on Reading. Twenty-fourth Yearbook. Bloomington, Ill., Public School Pub. Co., 1925.
The Teaching of Reading: a Second Report. Thirty-sixth Yearbook. Bloomington., Ill., Public School Pub. Co., 1936.
Pennell, Mary E. and Cusack, Alice M. The Teaching of Reading for Better Living. Boston, Houghton-Mifflin, 1935.
Pitkin, Walter B. The Art of Rapid Reading. N. Y., McGraw-Hill, 1929.
Sangren, Paul V. Improvement of Reading Through the Use of Tests. Lansing, Mich., Franklin De Keine Co., 1932.
Stone, Clarence. Better Advanced Reading. St. Louis, Webster Pub. Co., 1937.
Strang, Ruth et al. Reading in High School and College. Lancaster, Pa., Science Press Printing Co., 1938.
Thorndike, Edward L. Improving the Ability to Read. N. Y., Teachers College, Columbia Univ., 1935.
Traxler, Arthur E. The Teaching of Corrective Reading in the Junior High School. Bloomington, Ill., Public School Pub. Co., 1934.

20. How can the administrator evaluate the success of his remedial reading program?

The problem of evaluation is one that the administrator rarely has to raise, for others usually present it first. Secondary teachers are prone to insist that elementary teachers have failed to teach the student to read adequately. Parents and employers speak with finality of the secondary school graduates, even of some of those who have studied in remedial classes. All too often the administrator is on the defensive when evaluating his program and limits his study to rationalizing what is happening rather than evaluating the success of what has happened and the needs for the future.

Measurement by standardized testing is one indication of the success of instruction. Available tests for reading, however, cover an extremely limited phase of reading. At best, they enable administors to say that students at a given stage of development are responding to printed stimuli more accurately than ever before. The concept of grade level of ability, like the similar grade level difficulty of material, is patently inadequate.

Standardized tests are dangerous in evaluating the success of a remedial reading program in that they are capable of blinding

administrators to serious defects in reading programs. One city director of research, for example, was justly proud that every school in the system tested was above grade in reading. With that result he was content to drop evaluation of reading instruction. Just one of the things he did not know was that in a majority of the primary classes in that system pupils read every day seated in the darkest corner of the room with only light reflected from a blackboard on their books and facing the bright light coming in from windows. The hardships wrought by this practice would probably never be realized by testing.

In being critical of the reading program, Huse pointed out another aspect of evaluation that present tests do not reveal. In the book that bears the suggestive title, The Illiteracy of the Literate, Huse wrote, "A consideration of the frauds perpetrated daily on the masses makes it clear that the population as a whole learns little beyond how to sound written symbols." The administrator might well ask himself now much his remedial reading classes are doing to improve this condition.

The need of evaluating the ability of students to comprehend propaganda and its uses was indicated by Bertrand Russell when he wrote,"One of the most important parts of education, and one of the most neglected, is that which teaches how to reach true conclusions on insufficient data." Perhaps it is expecting too much of remedial classes to carry that burden.

Leaders in totalitarian governments think of authors as "engineers of human souls." Are American schools training students prepared to utilize intelligently the contributions of these "engineers"? Does the remedial reading class assist significantly in this process, or is it content to aid students achieve proficiency in a so-called "tool-subject"?

Today it is fashionable to speak of literacy. One hears much of economic literacy, social literacy, and political literacy. Campaigns are waged in some quarters to liquidate illiteracy. Is the administrator assured that in so far as possible he is graduating literate individuals? Discrepancies between school standards of "good literature" and library circulation or news stand sales remain a challenging area for careful evaluation. Attitude toward reading, pride in fine discriminatory reactions, willingness to put forth the effort to read well in difficult areas, are objectives that thus far have defied careful evaluation. This difficulty does not exonerate the administrator from studying the problem.

Thomas Jefferson wrote, "If the condition of man is to be progressively ameliorated, as we fondly hope and believe, education is to be the chief instrument in effecting it." Reading is the centermost part of education, embracing all aspects of the process.

Remedial reading is a sigificant part of the entire reading program. The problems facing the administrators that have to do with reading are many and difficult. The past is marked by gradual but significant advances. In the coordinated efforts of administration, research, supervision, teaching, and learning lies hope for the future. It is a task worthy of the best in all of us.

A COMMUNITY READING CLINIC PROGRAM

Mrs. J. C. Wilcox, Director Wilcox Clinic,
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The reading clinic is comparatively a new idea in remedial instruction. I will discuss three types of reading clinics: one which has been established, the Boston University educational clinic, secondly, the private clinic; and finally the public school reading clinic. You can decide which is the most workable clinic for your community----that will be as close to an ideal as we can come today.

Every community school system needs some provision for those children who fail to learn to read. This group of children of normal or superior intelligence consists of 10 to 25 per cent of our elementary school population. These pupils often present problems too complex for the classroom teachers to solve. For these children every school system should provide an organized remedial program that offers intensive individual instruction. This special teaching should be carried on apart from the classroom; away, so to speak, from the scene of failure. The place selected for this work should be in a quiet neighborhood, accessible to as many schools as possible. With a school system favoring such a program, a specialist directing the work, and a building where any individualized materials and equipment could be kept--a reading clinic would have its basic needs.

The aim of a reading clinic is to make corrections and return the child to his regular school program as rapidly as possible. Of the thirty children who were admitted to the Boston University Education Clinic School during the last year, 25 have been returned to regular grades with complete corrections of their reading difficulties. Five children who were admitted late in the year will require additional remedial work before they are ready to return to school. Every child has made from three to six times the normal progress expected in school. Typical gains are shown by the following children: Thomas entered with a reading grade of 1.6 and left in six months ready for the fifth grade. Jane had a very high I. Q. She was in the third grade with only first-grade reading ability. After six months work in the clinic she was reading at 4.0. William had average intelligence. He was 14 years old and in the eighth grade. At the end of six months he had raised his reading grade from 4.2 to 8.4.

1. Due credit is herewith given to Dr. D. Durell some of whose statements in personal correspondence to the author are used in this paper.

The work in an educational clinic of this type consists in a thorough analysis of the child's confusions and faulty habits in reading and related skills, followed by a remedial program planned to correct the difficulties found. Dr. Durrell points out that altho reading appears to be a simple process to one who does it easily, the analysis of reading difficulties requires the observation of more than one hundred basic skills. Since children admitted to the clinic seldom have the same combination of errors, individual tutoring is necessary if rapid corrections are to result.

The remedial program in reading clinics varies according to the ideas of the person in charge. But a few essential elements must be present if the clinic is to succeed with the majority of cases.

The child who has failed demands a highly motivated program. Motivation is attained by giving interesting and purposeful reading, showing the child his gains in various skills each week, varying the length and type of each exercise to fit his attention span, providing exercises which gradually increase in difficulty, and in other ways increasing his confidence, security, and pleasure in reading. No difficulties in interest and attention appear after a few days of carefully planned remedial instruction. A tutor's success with the child depends on her ability to motivate the corrective work and produce within the child a growing confidence in his ability to read.

The next essential feature in a reading clinic is instructional materials of a proper level in each of the basic reading skills. The rapid gains demanded of the reading clinic are made only when the child is given material which he can master. The difficulty is increased as the child's power grows. Confusion results when the learning load is too heavy.

The reading clinic should have a large file in which each tutor can locate corrective work for his pupil's specific disabilities. One section would contain word recognition and word analysis exercises on various levels. Quick recognition of words is necessary for accurate and rapid reading, while the ability to analyze unknown words is required for independence in reading. Most of the remedial reading cases that enter the clinic have failed to learn to read by the whole-word method. Therefore other recognition methods must be devised to fit the child's particular needs. Reading methods that produce over-analysis of words make slow readers, other methods produce inaccurate word guessing. It takes a clever tutor to avoid these pitfalls and still over come the incorrect reading habits which children have developed.

The reading clinic personnel should have one teacher who had made the oral reading skills and habits her specialty. This work would include phrasing, experssion, voice control, ennunciation, and attention to punctuation. This work offers

an opportunity for some group activity. We have found that choral poetry is the easiest way to get a response from children who dread oral reading. I usually start with humorous poetry such as the "Owl and the Pussy-Cat." Each child is given a typed copy, double-spaced. The best reader is selected for the leader. The poorest reader is selected for the pig. He reads "I will." Accordingly each child is given a chance to be the owl, or the pussy cat or the pig. Attention is directed toward punctuation, rhyme, rhythm and expression. Other tutors are given a list of the more difficult words in the poem in order to help the child privately. Other poems the children love are "The Camel's Hump" and "Lone Dog." Toward the end of the clinic period we introduce the typical school reader that previously has caused them so much embarrassment in the classroom. We try to select readers that are highly motivated and at least a year below the present reading level of the child so that he will experience no difficulty with the vocabulary.

Each tutor must develop some means of encouraging silent reading. In the clinic's file there should be numerous silent reading exercises that will stimulate the child to establish silent reading speed and independence. The child can be given guidance and encouragement in his voluntary reading. The library book that he takes home must have an easy vocabulary load, yet the subject matter must be at his age level. These books are hard to find. An ideal clinic would endeavor to find many books of this type. There is nothing so discouraging to a child who wants to read as the book that is filled with airplane pictures and pages of print he cannot decipher. If the reading clinic has no such books then one must be made. Airplane pictures are pasted in a blank book and the child dictates his own story which is then typed and pasted on the opposite page. Then he takes his book home and reads it.

For the older children who attend the clinic an effort is made to increase their study skills for the various kinds of assignments required by school work. These include thorough detailed reading and rapid reading for scanning and locating information. There are several fine workbooks that include these drill exercises for the secondary grades.

The clinic must always be ready to give special attention to children needing help in spelling, writing, and composition. These skills are closely related to reading. A small group may study and learn the first 1000 words, then for special difficulties they can use the typewriter or metrone-scope. Some children profit by phonic drills. These exercises can be made very interesting by anyone who has a sense of humor and a little imagination.

The teaching staff of any clinic must have a well-trained director and a group of similarly trained assistants.

The principal in each school acts as the chief co-ordinator. The classroom teacher cooperates with the principal and later tries to follow out recommendations made by the clinic. The classroom teacher usually locates her reading cases by standardized tests at the beginning of the year. Those children are then tested by the director. Then a tutoring program is mapped out and the child attends the clinic part of each school day until he reaches his grade level.

There are many advantages in having a reading clinic connected with a university. Children are not only taught to read but students and classroom teachers have an opportunity to work with these children to carry out tutoring plans under supervision. At the present time the Education Clinic of Boston University has so many teachers in public schools who have taken their courses that about 1000 children are well taken care of in remedial or regular classes. Almost every private school in greater Boston has a full-time remedial teacher who has received this clinical training. This is the best way to take care of a great number of children in a large school system.

The Boston Clinic is practically self-supporting. They examine approximately 200 children each year. The fee for most of these examinations is $5.00, although many parents pay $25.00 or even more. This income is kept in a separate University fund to care for clinic expense. Children admitted to daily remedial instruction at the University pay $10.00 a week, in most cases, where the parents have expected to pay private school tuition. Of the 30 pupils who attended last year, more than half paid this tuition, while others paid smaller amounts. With thirty paying pupils, six teachers were employed on half-time salary. This year the staff decided to accept only free cases, so that the only income they received was from the examinations. Their funds are low again now and next year they will probably accept a number of paying children.

This summer I hope to open a reading clinic in Pomona independent of any school system or of any collegiate institution in the vicinity. It will be entirely a private enterprise and I hope a successful one, academically and financially. Because, first of all, in order to place such a department in any school system the administration must know whether or not it will pay its own way. The expense of establishing a permanent staff of superior teachers, purchasing necessary equipment and the necessity of individual instruction in this kind of work would make it almost a prohibitive financial undertaking for the average school system.

The clinic in Pomona will open July 24. The younger children will attend from 8 to 10, the older group from 10 to 12. There will be three superior classroom teachers, one remedial teacher and myself. An advisory staff will consist

of a pediatrician, an otologist, an oculist, a optometrist, and Dr. Peter Spencer of Claremont Colleges. We are selecting boys and girls who possess above average mentality and show a retardation of 12 months or more in reading ability. The cost for 60 hours of tutoring will be $30.00, and perhaps an extra charge for examination if the schools are unable to provide sufficient records. The principals of each of the seven elementary schools have handed in lists of children who would benefit by this work. For those parents who are unable to pay the clinic fee, we are asking that they pay whatever they can afford each week; and we hope the rest of the amount will be furnished by one of the service organizations in Pomona.

Our equipment will include an Othalmo-graph, to film eye movements before and after training, a Metrono-scope to develop rhythmical rapid reading, typewriters, telebinocular equipment, sight-saving equipment, and any other material we can get. Each teacher is donating for use any equipment she has that will be suitable for this work. The library will provide us with necessary books for voluntary reading. I hope that during this period we can introduce each child to the children's librarian and show him where to find books he can read.

If this clinic is a success this summer, I want to continue through next winter. Each child will receive help from 9:30 to 11:30 each day and return to school in the afternoon. It will cost approximately the same amount, but we can continue for a longer period than six weeks if necessary. The next year I would like the school administration to incorporate the reading clinic which I have established. They would then select a director and pay his or her salary. The clinic would receive $10.00 from each parent for testing and equipment. The school from which the child was absent would forfeit his average daily attendance money to the clinic. This would amount to approximately $10.00 for eight weeks. This money could be used for running expenses and the extra part-time teachers. The P.T.A and various service clubs could be interested in children who presented serious difficulties yet had no means of paying the examination fee.

The advantage of this type of clinic over the private or university controlled clinic would be the development of a program providing greater understanding and appreciation between the community and the school. Furthermore this type of clinic would reduce the cost to parents who heretofore had to pay for private instruction.

I feel sure that over a period of time a clinic would become a financial asset of any community. The promotions would be greater each year; there would be fewer discipline problems; the lower grade teachers would experience more freedom because the parents would stop nagging at the already over-burdened teacher about her child's reading; and the secondary schools would be

overjoyed at the thought of receiving no retarded readers. An ideal reading clinic could produce these results. Any large community could establish, operate, and finance a clinic if they already have a full-time remedial teacher, without incurring much additional expense.

For those who are skeptical, it will be interesting to watch our experiment this summer and next year. Perhaps we are on the right track in an attempt to organize reading instruction for the child who has formally "failed in reading."

TECHNIQUES AND MATERIALS FOR READING INSTRUCTION

S.E. Wirt, Keystone View Company, Meadville, Pa.

Those of you who have known of my work before will not be surprised that my major concern with instructional materials and methods is a visual issue. You have heard me speak of school problems of vision, especially of means to detect visual handicaps which warrant professional examination and often treatment. Most teachers are concerned about possible physical obstacles to learning, but many of them are not satisfied with a program which depends so much on the cooperation of parents and active assistance from other professions. Some don't have a very rational idea about such services, and some seem to distrust even the ministrations of a health department. Some, possibly, have been disappointed in the results of "outside" assistance. Nearly everywhere that I have talked with teachers about visual problems I have met with the question: "What can WE do about it?"

It begins to seem likely that teachers themselves can do a great deal about it. In several education centers reading problem cases are receiving formal training in eye skills at the hands of educators. Such a program was reported recently in "The Parents' Magazine" from the reading laboratory at the National College of Education. But these are only experimental and demonstration programs, usually under the supervision of a licensed eye specialist. Eye training based upon diagnosis of visual anomalies is implicitly restricted by law to licensed practitioners of medicine, optometry, osteopathy, etc. Educators might undertake certain phases of training in "seeing" as legitimately as they undertake training in musical appreciation, singing, dancing, and other physical and perceptual skills.

Formal elaborate eye training requires instruments and special technique, and usually is available only to extreme problem cases which have been referred to a central clinic. If teachers in general are to participate in a program of visual development, the program should be worked out in terms of instructional materials and methods. Such a program also should be much more universal in its application than the specialized approach of the reading clinic and visual expert. In other words, general teacher participation would obviously be directed toward <u>preventive</u> rather than <u>corrective</u> visual training. The goal would be visual hygiene and prophylaxis, or the development and maintenance of better seeing ability. Only in cases of serious failure in such a program would the children be referred elsewhere for ocular assistance.

Let me again make this distinction: The teacher's concern is with "seeing ability," which is vision in the broadest sense. "Seeing" involves perception, recognition, appreciation, and enjoyment as well as motor adjustments of the eyes and head. The eye specialist's contribution to some extent may improve clearness and keenness of habitual perception, but his concern mainly is the facilitation of motor responses of the eyes. In a word, his help is <u>ocular</u>.

Now, it is entirely possible that proper instruction, practice, and development of seeing skills and habits will forestall the appearance of many ocular dysfunctions and will modify the acuteness of others. (This statement should not lead anyone to suppose that ocular assistance is undesirable nor in many cases unnecessary; nor should teachers be party to any "throw-away-your-glasses" campaign.) Some of you might remember the curve of incidence of eye-function efficiency, which I exhibited several times last winter. The development and maturation of certain basic eye skills reached its "ceiling" on the average in the fourth grade. After that the curve of ocular efficiency declined continuously. It should be remembered that the factors under test in this instance were those which had correlated most highly with success in reading, as determined by Dr. Parkins and his associates in the American Research Council of Optometry. The obvious inference is that even prior to fourth grade certain influences are present which are inimical to normal eye function; somewhere in the composite internal-external environment of the average child some changes must be going on which reverse the curve of visual development in these respects.

We can surmise some of the changes, but which ones are responsible we can only guess at. About this time, the onset of puberty, there are major changes in glandular activity and internal chemistry. We might postulate also the cumulative effects of increasing sedentary and indoor life, at least for longer periods each day, along with effects of inadequate light, air, sunshine, etc. Nutritional deficiencies may be intensified by the altering chemical requirements of the body. Emotional maladjustments and crises may be intensified during these years. The actual requirements in reading may be increasing in geometric ratios, not only in time but also in range of word forms which must be familiar. Possibly the instructional materials have ceased to challenge the mind and so to excite keen observation and perception, which in turn would excite optimal visual performance. Excessive absence, inadequate supplemental reading experience, premature attempts to read books, and many other instructional difficulties may have resulted in faulty habits of attach on reading materials. All of these factors have been suspected seriously of affecting visual integrity and performance in different cases.

I can't presume even to point toward the solution of may of these problems. Some of them are out of reach even of teachers. The need for light, air, water, sunshine, and exercise are obvious; and I will assume that you people are not overlooking but actually overseeing the distribution of such necessities <u>during school hours</u>. My only further suggestion along such lines is perhaps to break up long book reading periods into shorter spans, and to intersperse them with activities involving eye-hand coordination, eye-foot coordination, vision of things in motion, and opportunities for seeing distances greater than the confines of the classroom. This suggestion is chiefly precautionary; it involves visual activities which we use customarily in eye training as antidotes for severe visual activities involving reading. The explanation is usually that visual

adaptations to the demands of book reading are more likely to be positive and successful if they are not exercised too continuously.

Another corrective suggestion has come from Dr. Brombach, who developed single-handed a unique approach to reading problems. After a brief period of reading, children with reading difficulties commonly show an enlarged blind area in each eye, which reduces to normal after further reading with either eye closed. Miss Dow, in Fontana, has demonstrated this peculiar phenomenon and its elimination on a number of children. Frequently reading ability improves along with the improvement in vision. In order to effect a permanent cure Dr. Brombach corrects the postural habits of the child as much as he can. Some problems require the help of an orthopedist or chiropodist. But the commonest cause to which he attributes this interference is a postural habit in reading in which the eyes are not kept level with the lines of print, creating a vertical imbalance in the postural requirements of the two eyes. Teachers can correct such postures, eliminate head tilts and side views, establish correct book distance with the elbows forming a right angle, and verify the effectiveness of it all by charting the blind spots.

Only recently have I been able to unearth any other suggestions for visual development in the schools. The information on which I base these items in scanty, including a few strong clues, several experimental studies, some suspicions and generalizations. I offer these only as suggestions, hoping that some of you will be able to develop them further. I am convinced that in the general direction of these suggestions we will find some values for better vision and better reading.

1. We who have been engaged in stereoscopic training have ample reason to believe that young children (say from three years of age) who have regular experience with good stereoscopic pictures have a much better chance of developing superior visual skill and escaping many forms of ocular dysfunction. Dr. Willis Uhl, at the University of Washington, points out that the stereoscope, with its double picture, makes it inescapable that both eyes must participate. It would be helpful to have the results of a long-time study of the comparative visual skills of two groups of children, one with and one without frequent and regular experience with stereoscopic views. I believe that such a study is seriously being considered, if it has not already begun, at Peabody Teachers College. I have found many eye doctors whose major objective in treatment of their patients is to develop high stereoscopic ability as the simplest and most positive method for reorganizing all the component processes of vision.

The beneficial results of stereoscopic pictures are not confined to children. One large industry in the East, about which I have been told, employing a number of young women in some exacting close work, provides each one of them with a stereoscope and interesting views. Regularly at periods throughout the day these employees are required to lay aside their work and to take up their stereoscopes for a few minutes of visual relaxation and recreation--

the natural antidote for the stress of their work. For many years stereographs have been used in eye training. Their prophylactic values should be equal to their therapeutic value.

It should take little urging to get stereographs introduced for regular school use, even in high school, for they have such unique educational value. Conceive, for example, two classes in solid geometry, in only one of which the students view the constructions for the proof of their theorems first in three dimensions in the stereoscope before they attempt to read three dimensions from the same figure on a flat page. To which class would you rather be responsible for teaching solid geometry?

Less spectacular, perhaps, are the high school uses for stereographs in social sciences, natural sciences, art, etc. Oliver Wendell Holmes eulogized the stereograph for its limitless detail, which cannot be exhausted in a hundred viewings. This detail and the enhancement of the third dimension rarely fails to provide their own stimulus and motivation for study of the pictures. The teacher's problem is to limit the students to a very few significant views each day.

In one of the present books covering "fourth dimension" some of the diagrams had to be drawn in three dimensions; and a small, collapsible stereoscope came sealed in the cover of the book! The past era of the stereoscope on the parlor table was only the first novelty period for the device. Now literally hundreds of thousands have been used in the home for eye training on a doctor's prescription! Photographic supply houses report a rapid increase in the number of amateur photographers now taking their own stereoscopic pictures. The true stereoscope era is still in the future, and among its many uses educational uses should not be the least.

2. Stereoscopic pictures also take a particular place in the larger scheme of so-called "visual aids," including models, expeditions, museum collections, motion pictures, flat pictures, projected pictures, charts, maps, diagrams, cartoons, etc. Such instructional materials have been integrated with classroom activities as "bookless" aids in building concepts and experiental background. But they can also aid visual development. Obviously they stimulate variety and types of visual activity different from that of reading print. In this respect alone, not considering other possibilities, they constitute a phase of eye hygiene -- a diversion from the more stereotyped eye activity in reading print. And perhaps they are as valuable a form of "reading" as reading print!

But in such materials is still further assistance to vision. The development of adequate concepts, and relating these concepts to words, affects eye behavior during reading of print. To be crudely simple: in reading print, when experience precipitates a wrong or inadequate connotation for a word, the error may be manifest later on when the accumulated meaning doesn't make sense. Then the eyes must break their unconscious rhythm and search back

consciously for an opportunity to alter the meaning of the whole passage. If the eyes rest on a word for which experience and context can precipitate no meaning at all, the eyes must again interrupt their routine. They will shift away from the meaningless term, and are as likely to make a movement backward as forward. But in this instance the eyes are not moving back toward the offending word, but away from it! The eyes cannot even consciously be made to fixate for long an area that has no meaning. Just try to look steadily at a small spot on the wall after you have exhausted its possibilities for significance! If you continue to stare at a meaningless word, I think you will find yourself soon reduced to observation of the individual letters and even details of the letters.

I don't want to carry this point too far. In brief, experiments are showing that perception governs the eye fixation even more truly than fixation determines perception. Any any analysis of faulty eye movements in reading must take into account just such situations where lack of perception demoralizes the fixation rhythm. I am sure that such intrusions into unconscious ocular behavior are productive of ocular distress. Let us, at least, not shut the door on the possibility that faulty perception may play havoc with ocular efficiency and comfort. This is not less true in high school reading, where frequently students are expected to conceive principles and generalizations from printed matter in which are many words of no clear significance to them.

The implication is obvious: the best solution or amelioration for such situations is better preparation of the student for his particular reading assignments -- greater familiarity with the basic terms and more valid and reliable concepts to go with them. In developing more valid concepts the so-called "visual aids" are most valuable. Dr. Charles Hoben, in a book: Visualizing the Curriculum, relates different types of visual material to the several stages of generalization, abstraction, and concept building. The ideal building material for child experience, theoretically at least, is the "real thing"-- such as the actual "goings-on" at a dairy farm which the children might visit on an expedition. When possibilities for such experience are exhausted or inaccessible, the next resort is to samples, models, working models, museum collections, exhibits, and displays -- all characterized by the element of concreteness they retain in representing the larger background from which they are drawn.

The next recourse is to the stereograph, which unlocks vast libraries of material and still keeps the three dimensions and detail of "reality." Then to motion pictures, especially where a process must be visualized. Likewise simple dramatizations. Then to flat pictures and projected still pictures, which still have some elements of direct representation, and finally to graphs, charts, maps, and diagrams, where some essential aspects of the experience have been abstracted and are represented in conventionalized and rather arbitrary forms. In this manner generalized and abstract concepts are evolved with a maximum of meaningful content. Some

portion of this whole field of material will likely be helpful and beneficial in almost any learning project.

3. A more recent innovation also promises something in ocular hygiene. Four years ago an elementary supervisor in a suburb of Milwaukee persuaded some of her first grade teachers to use nothing but typical sight-saving materials throughout the first year's reading -- charts, block letters, huge type, etc. She is now preparing to report that the children from these groups, in their second, third and fourth years, showed less frequent incidence of visual dysfunction than those from the other groups. And their progress in reading also was superior. The Telebinocular tests were the criteria of visual skills.

Even longer ago a method of first-teaching was evolved incorporating stereographs, chart work, lantern slides, and readers. The same pictures appeared in the stereographs, lantern slides, and readers; the same words and sentences appeared in the chart work (or blackboard work) and the readers. These books were called "The Visual Readers." The depression sunk them, and only a few school systmes have been using them, but they with much satisfaction. Visual data in these systems have not been available. But modifications of this program are beginning to interest teachers, both in respect to better reading and better vision.

About two years ago, in Evansville, Indiana, some teachers undertook an experiment in teaching reading entirely apart from books, chiefly using projectors and slides they made up themselves. The children began spontaneously reading from books, and read more than the teachers expected. Excellent results of the method were reported at one of the N.E.A. meetings. Unfortunately, these teachers were not concerned with vision and made no study of it. We are trying to arrange for a visual investigator to survey those children now, to see if they show any reliable differences in visual skill which might be attributed to the method.

Incidentally, I saw an excellent demonstration of the use of a projector and home-made slides in the first-grade room here in Claremont.

Now, in the past few months, comes another projector method. Attached to the projector is a camera shutter, which makes of it a tachistoscope for short exposures. The originator of the idea, Mr. Robert Carroll, claims excellent results in teaching reading. With home-made slides it is possible even to provide word and number drill with brief exposure to increase the span of recognition, and even to develop rhythmic eye movements. We propose to keep track of visual results with this method.

Such methods seem to have possibilities in visual hygiene, chiefly because of the variety of visual activities that can be provided and the emphasis on greater distances for the younger children.

4. Most of you are familiar with the Metronoscope and its use in schools. You should be able to visualize a more elaborate form of the same principle adapted to motion pictures, as has been developed by Dearborn at Harvard. All such methods are pointed toward better reading and better vision.

5. Another clever suggestion has been to use, in chart work, not printed letters but solid letters that can be attached to a background -- a sort of appliqué. Several such alphabet systems are available, but expensive. There are even used as price tags in department store windows. The principle in their use for teaching reading is similar to that in the Fernald method -- if tactile and kinesthetic sensations are helpful in remedial reading, they ought to be provided for in the primary teacher's repertory and equipment. Eye-hand coordination is conceded to be a powerful aid in professional eye training. It is an odd but hopeful suggestion -- that children should learn to read in three dimensions. Even flat letters could be "shaded"-- that is, fringed by their own shadows, giving the illusion of third dimension.

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All of these methods are pointing toward ocular hygiene, which I have tried to set before you as a goal. Though they are new, and definite information as to results is scantly, nevertheless I commend them to you for investigation. If you drill here you may strike oil. And then, in another year or two, maybe I will be able to speak more positively and helpfully -- perhaps to teachers in northern California next time.

In conclusion, let me make my last suggestion: many of these methods are exciting, the paraphernalia is flashy. But amidst it all don't overlook the lowly but princely stereograph. It is probably your best bet for ocular hygiene.

Research Studies in Reading at Claremont Colleges, 1939.

A MULTI-SENSORY APPROACH TO THE TEACHING OF PRIMARY READING

Agnes Newcomer
Master's Thesis: Claremont Colleges, March, 1939
Advisers: M. B. Eyre, F. T. Perkins

The purpose of this study was to devise and evaluate a method for teaching reading to beginners whereby all the senses - including vision, hearing, touch, kinaesthesis, taste, and smell could be involved.

A review of the history of reading instruction shows the use made of the senses by famous teachers of the past: Rousseau, Pestalozzi, Herbart, Froebel, Montesorri, Dewey. Mechanization of methods led away from these teachings. Recent individual remedial programs seem to return to a use of wider sensory stimulation, (Fernald, Monroe, etc.).

A theory is developed to show the logic of a multi-sensory method. Reading is regarded in its broad aspects as a process of making discriminatory responses to stimulus-situations. This activity is one involving the whole child. The response is made by the child as a member of a total-situation. Parts of this total-situation, as such, do not affect the child; the entire situation as a pattern stimulates the child to respond. Illustrations of the unity of the senses are drawn from psychological sources, including effect of stimulation in one sense field upon acuity in another field, color on sound, sound on color, odor on sound, touch on vision, etc. It would appear that the total-response of the child means that all senses are involved to some degree and that vision, audition, taste, etc., are to be regarded merely as parts of a larger sensory experience. It would seem to follow that better effects would be obtained in teaching the child to read, if as many avenues of sensory stimulation were included as possible.

To measure something of the effectiveness of a multi-sensory method two groups of second and third grade pupils were selected from the Hamilton Elementary School, of Pomona. These two groups known as Experimental group and Control group contained 12 Mexican children each. The children in the two groups were paired on the basis of reading ability and I.Q. Reading tests employed were the Gates Primary Reading Tests, Types 1, 2, 3: Gates Silent Reading Tests, Types A, B, D; Gray's oral Reading Paragraphs. These 24 pupils were all in the same class. In addition 7 slow first grade Mexican pupils from the Roosevelt Elementary School, Pomona, took part in the experiment as a non-competitive group.

The only variation in procedure between the experimental and control groups was on the factor of vividness of sensory stimulation. The experimental group following the multi-sensory method was given actual articles to be handled, seen, heard, smelled, felt or tasted, whereas the control group had pictures of the article for illustration. The same order of lessons was followed in both groups and both were taught by the same teacher. While the experimental group was being taught, the control group went out to play, and vice versa.

The procedure with the experimental group provided for all

conceivable direct sensory experiences. The children had the sensation and would instantly say the word-symbol while fixating upon the written word-symbol. The sensory experience, the pronouncing and fixating were repeated two or three times. The children then dictated short sentences describing their reactions, which the teacher printed on the blackboard, to be later duplicated and pasted into workbooks. Lessons and materials were provided for each class meeting.

The control group followed the same general plan except that pictures and memory took the place of the actual objects. The children pronounced the words while looking at the picture, and later dictated their ideas about the picture, which were placed on the board and duplicated for the workbooks. The two groups were taught separately only during the reading period.

The group of 7 non-competitive pupils followed much the same procedure as the experimental group using a multi-sensory method. Typed lesson sheets containing likely sentences were provided for this group. Fifteen minutes a day was devoted to the reading problem by this method.

In all groups the experiment extended for about three months. Comparison of the experimental and control groups on the reading tests employed did not show statistically significant differences; however, the results showed certain trends. The experiment group showed a mean improvement on the six Gates tests of a .23 years in reading grade as compared with a .17 years in reading grade in the control group. The control group showed the greatest gain on the three Gates Primary Tests, whereas the experimental group made considerably greater gain on the three Gares Silent reading tests. Considering all six tests the experimental group advanced approximately one-half month beyond the control group over the three months of study.

In general the results indicated that the multi-sensory method was superior to the picture-illustration method in aiding pupils to understand and organize meanings in reading. On the other hand the picture-illustration method was superior in teaching word recognition, simple sentences, and paragraphs.

A low positive correlation was obtained in the experimental group between original reading ability and reading improvement and a slightly higher correlation between intelligence and reading improvement. In the control group negative correlations were obtained for both these comparisons.

The non-competitive group of seven pupils was given only the three Gates Primary Reading Tests. They showed an average gain of .28 years of reading grade. These pupils who had been retarded before the study began, progressed normally over the three months of the study.

Careful analysis of individual cases gave evidence of important qualitative improvements under the multi-sensory method including increase in interest, breakdown of antagonisms toward reading. It is concluded that the multi-sensory method is feasible in combination with other methods for the primary reading program. It appears to better meet the needs of some pupils not cared for by present methods.

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